loop unbundling rules for the mass market that ensure competitive access through extensive unbundling of the legacy copper loop facilities while promoting incentives to invest in next-generation network facilities and equipment through more limited unbundling of fiber-based loop facilities.

235. We conclude that requesting carriers seeking to serve the mass market face varying levels of impairment on a national basis without unbundled access to the transmission path between the central office and the customer premises depending upon whether the loop used to complete this path consists entirely of copper, or consists of a hybrid of fiber and copper cables, and whether a requesting carrier seeks to offer narrowband or broadband services or both. Pursuant to our section 251(d)(2) unbundling standard, we consider generally whether the potential revenue opportunity exceeds the costs, taking into consideration the relevant entry barriers – *i.e.*, scale economies, sunk costs, first-mover advantages, and barriers within the control of the incumbent LEC – and evidence of actual marketplace conditions.

236. Because of the importance of broadband to the American public and telecommunications users generally, we also consider other factors, foremost among these our obligation to ensure adequate incentives for infrastructure investment under section 706 of the Telecommunications Act of 1996, under our "at a minimum" authority in section 251(d)(2). For copper loops, we find on a national basis that requesting carriers are impaired without access to these loops, including copper subloops, because their absence is likely to make entry uneconomic.[711] For other types of loops (*i.e.*, FTTH loops and hybrid fiber/copper loops used in packet-based transmissions), however, we recognize that additional revenue opportunities associated with increased bandwidth capabilities may alleviate, in direct proportion to the level of fiber deployment, at least some of these entry barriers. Moreover, our obligation to ensure adequate infrastructure investment incentives pursuant to section 706 supports limitations on the unbundling of fiber-based loops. Finally, the existence of intermodal competition for mass market broadband services reduces the need for more extensive unbundling rules.

(a) Impairment

237. The costs of local loops serving the mass market are largely fixed and sunk. By fixed we mean that these costs are largely insensitive to the number of customers being served.[712] Much of the cost applies whether a carrier serves a single residential customer or ten thousand

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[711] In its *Verizon* decision, the Supreme Court stated that "the most costly and difficult part of [replicating the incumbent LEC's network] would be laying down the 'last mile' of feeder wire, the local loop, to the thousands (or millions) of terminal points in individual houses and businesses." *Verizon*, 535 U.S. at 490-91. Indeed, in its *USTA* decision, the D.C. Circuit quotes the following passage from this Supreme Court decision in its discussion of cost disparities: "entrants may need to share some facilities that are *very expensive to duplicate* (say, loop elements) in order to be able to compete in other, *more sensibly duplicable* elements (say, digital switches or signal-multiplexing technology)." *USTA*, 290 F.3d at 426 (citing *Verizon*, 535 U.S. at 510 n.27) (emphasis added by D.C. Circuit).

[712] Covad Comments at 28; AT&T Reply at 150, 154-55 (citing AT&T Comments, Attach. B, Declaration of Richard N. Clarke (AT&T Clarke Decl.) at para. 23); WorldCom Reply at 14-18 (citing WorldCom Reply, Attach. A, Declaration of Mark T. Bryant (WorldCom Bryant Reply Decl.) at paras. 3, 5-14).

residential customers: that carrier must secure rights-of-way, dig trenches or place poles, and run wire underground or along poles.[713] Such deployment costs are also sunk. That is, local loop facilities are not fungible because they cannot be used for any other purpose if the investment fails.[714] If a new entrant overbuilds to serve a mass market customer and loses that customer to another carrier, the new entrant cannot economically redeploy that loop to another location. Its investment might be lost unless it could find a purchaser for its redundant loops. This is true regardless of whether the new entrant was providing narrowband or broadband service, or both. A carrier will not deploy mass market loops unless it knows in advance that it will have customers that will generate sufficient revenues to allow it to recover its sunk loop investment.[715] This certainty could most easily be achieved through long-term service contracts and a large, guaranteed customer base. In contrast to the enterprise market, however, long-term contracts are not commonplace in the mass market for either the narrowband or the broadband services and we have no information in our record to indicate that consumers ordinarily would accept such terms.[716] As new entrants, competitive LECs do not enjoy a large guaranteed subscriber base that would provide a predictable source of funding to offset their local loop deployment costs.[717] For these reasons, we find that the costs of self-provisioning mass market loop facilities are demonstrably greater than those faced universally by new entrants in other industries.[718]

238. Incumbent LECs also enjoy first-mover advantages that work with the steep costs noted above to compound the entry barriers associated with local loop deployment. When the incumbent LECs installed most of their loop plant, they had exclusive franchises and, as such,

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[713] *See* Covad Comments at 28 (arguing that incumbents could afford such massive fixed costs because they had 100% of the market share when they constructed their loop plant); WorldCom Reply at 63 (citing WorldCom Bryant Reply Decl. at para. 11). We note that fixed costs may strongly affect small businesses because, among other things, they likely serve fewer customers. See *supra* Part V.B. for a discussion of the relationship between fixed costs and scale economies.

[714] AT&T Reply at 144; WorldCom Reply at 16.

[715] NuVox Comments at 74-75; AT&T Reply at 154 (citing AT&T Willig Reply Decl. at paras. 21-22, 26, 39); *see also* Covad Reply at 16 (arguing that there are no "uncommitted entrants" because of the extremely high sunk costs in constructing loop plant).

[716] The record reflects that mass market customers typically purchase services offered over voice-grade loops on a month-to-month basis at relatively low prices. Compared to higher-capacity loops demanded by other customer classes, loops serving the mass market require less complex technology. Nevertheless, replicating a single loop for a mass market customer is prohibitively expensive due to the relatively low revenue per loop as compared to the cost of construction. This factor, coupled with the market's predominant use of short-term customer commitments, equates to a very low profit margin per loop, especially for new entrants. Moreover, loops for mass market customers exhibit substantial economies of scale, in that the larger the number of loops provisioned in a given area, the lower the average cost of provisioning each loop.

[717] As noted earlier in this Order, large sunk costs make it more difficult to ramp up to scale and, therefore, overcome a scale economies problem. *See supra* Part V.B.

[718] AT&T Comments at 127; Covad Reply at 15-18; WorldCom Reply at 14-18 (citing WorldCom Bryant Reply Decl. at paras. 3, 5-14).

the record shows that they secured rights-of-way at preferential terms and at minimal costs.[719] By contrast, our record shows that new entrants have no such advantage.[720] Even if a competitive LEC obtains speedy resolution of rights-of-way issues, it may still experience delays involved with constructing new loop plant. Incumbent LECs, of course, experience no such delays when providing narrowband or broadband services over their legacy copper loops. Because these loops are already deployed, they are available immediately for providing narrowband services (*i.e.*, voice, fax, dial-up Internet access) and available after performing any necessary line conditioning for providing broadband service. Furthermore, competitive LECs are also faced with the problem of overcoming the incumbent LECs' established brand name recognition for providing reliable service in order to convince (potentially reluctant) mass market customers to change carriers.

239. According to several commenters, due to the high fixed costs described above, the incumbents LECs designed their networks to minimize the extent to which they must modify their loop plant when adding new customers or services.[721] Accordingly, when incumbent LECs construct loops, they typically add several spare wire pairs to the customer's location because the cost of these spare wires is small in comparison to the cost of adding these pairs at a later date.[722] This design lowers the incumbent LECs' cost of adding customers. Incumbent LECs achieved low average costs because historically they have served 100 percent of demand in any given area. Their investments were recovered, in most cases, through regulated rates and an authorized rate

[719] *See, e.g.*, Covad Comments at 28 (stating that incumbents often obtained rights-of-way through the use of the states' eminent domain power); AT&T Willig Decl. at paras. 62-63 (arguing that as the first mover, incumbents received rights-of-way from local governments with only minimal transaction costs because the residents in that neighborhood or municipality otherwise would not receive any telecommunications services).

[720] *See* WorldCom Comments at 33 (contending that competitive LECs have been hindered in their ability to install their own loops by "municipal ordinances that have imposed excessive, non-cost based fees on access to rights-of-way and have also delayed such access through unnecessary and cumbersome application procedures and bonding requirements."). Although section 224 of the Act imposes nondiscriminatory access obligations on incumbent LECs with respect to their poles, ducts, conduits, and rights-of-ways, we note that such access does not eliminate the transaction costs or first-mover advantages described above. 47 U.S.C. § 224.

[721] *See* AT&T Reply at 149.

[722] *See id.* (stating that "a customer drop may contain six pairs of wires rather than two because the carrying costs of the extra capacity are small compared to the cost of deploying additional capacity later (*e.g.*, to add a second or third line)"); *see also* AT&T Reply at 150 n.101 (explaining the incumbent LECs' use of bridged tap and additional transmission electronics to maximize the use of the existing plant); WorldCom Reply at 15 (citing WorldCom Bryant Reply Decl. at paras. 11-14; AT&T Clarke Decl. at para. 23) (arguing that "once a cable route is established, there are only small incremental structure costs to serving additional customer lines located along the route.").

of return.[723] For a new entrant to match or even come close to the incumbent LECs' economies of scale, at a minimum, it would have to capture quickly a significant percentage of the market.[724]

240. We recognize, however, that the deployment of next-generation network facilities and equipment – that is, fiber optic cables and equipment used to provide packet-based services – affects our analysis. Although some of the entry barriers exist for both all-copper and all-fiber loops (*e.g.*, the costs are both fixed and sunk, and such deployment is characterized by scale economies),[725] the revenue opportunities are significantly greater for fiber-based construction. The record indicates that carriers can earn significant returns on their fiber-based investment by providing a suite of services ranging from traditional voice to full-motion video.[726] In fact, the potential rewards of fiber deployment may offset the likelihood that competitive LECs will view entry as uneconomic. In addition, the barriers faced in deploying fiber loops, as opposed to existing copper loops, may be similar for both incumbent LECs and competitive LECs.[727] Both incumbent and competitive LECs must purchase fiber and the associated equipment, negotiate access to the necessary rights-of-way, obtain any necessary government permits, hire skilled labor, and manage their construction projects in order to deploy fiber loops. Moreover, by some estimates, competitive LECs enjoy advantages that incumbent LECs do not have, such as lower labor costs and superior back office systems.[728]

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[723] AT&T Reply at 150 (citing AT&T Reply, Tab C, Declaration of Anthony Fea and Anthony Giovannucci (AT&T Fea/Giovannucci Reply Decl.) at paras. 6-7).

[724] *See, e.g.*, AT&T Reply at 157 (arguing that even with an "aggressive" market share of 30%, the new entrant's loop investments per line costs would exceed the incumbent's by 45 to 87% and its monthly loop costs would exceed the incumbent's by 39 to 65%).

[725] Covad Comments at 27 (arguing that xDSL "signals are no easier or cheaper to replicate than loops carrying POTS"); WorldCom Reply at 15 (citing AT&T Clarke Decl. at para. 23).

[726] Corning Comments at 19-20 (asserting that incumbent and competitive LECs are on equal footing for FTTH deployment). Corning and the FTTH Council estimate that FTTH loops allow revenue opportunities of approximately $33 per subscriber compared to $18 per subscriber for xDSL-based services. Letter from Timothy J. Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket 01-338, Attach. at 33 (filed Nov. 26, 2002) (Corning Nov. 26, 2002 FTTH Deployment *Ex Parte* Letter).

[727] *See, e.g.*, Verizon Reply at 40 n.117 (arguing that both incumbents and competitive LECs must incur and recover the costs of obtaining franchises and construction permits, and building out fiber loops). Similarly, as discussed earlier in this Order, incumbent LECs' first-mover advantages would be greatly reduced in greenfield situations. *See supra* Part V.B.

[728] Corning estimates construction accounts for more than 50% of FTTH deployment costs. Letter from Timothy J. Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. 2 at 9 (filed Nov. 20, 2002) (Corning Nov. 20, 2002 FTTH Deployment *Ex Parte* Letter). Corning further explains that labor is "the largest component" of construction costs, and that competitive LECs enjoy an advantage. *Id.*, Attach. 2 at 10-11. *See CSMG Study* at 14 (noting that competitive LEC FTTH construction costs for labor are lower than those of incumbent LECs); BOC Shelanski Reply Decl. at para. 3; *see also* Verizon Reply at 42.

(b) Other Considerations

241. As we have stated elsewhere, broadband deployment is a critical policy objective that is necessary to ensure that consumers are able to fully reap the benefits of the information age.[729] In this regard, we weigh how our rules related to broadband deployment address other policy considerations. In particular, we seek to encourage investment in next-generation network architecture suitable for delivering advanced telecommunications capability throughout the nation. We also look to promote the potential of broadband in a minimally regulated environment in accordance with the deregulatory intent of the 1996 Act. Finally, we seek to unleash the innovation that has been characteristic of the computer and software industries. We expect to develop unbundling rules that serve these broad goals so that consumers ultimately benefit from a ubiquitous, efficient, nationwide broadband deployment.

242. *Section 706.* In determining what our unbundling rules for loops used for broadband services should be, we also are guided by the goals of, and our obligations under, section 706 of the 1996 Act.[730] Section 706 directs the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans" by using regulatory measures that "promote competition in the local telecommunications market" and "remove barriers to infrastructure investment."[731] Through its "at a minimum" language, section 251(d)(2) provides the Commission with the discretion to consider factors in addition to impairment before requiring unbundling.[732] We find that this discretion is appropriately exercised by evaluating whether unbundling of local loops used to provide broadband services to the mass market is consistent with our section 706 mandate. In particular, we consider whether our unbundling requirements encourage the deployment of advanced telecommunications capability to all Americans by, among other things, promoting competition in the local market, promoting facilities-based deployment, promoting the delivery of innovative advanced services offerings, and removing barriers to infrastructure investment. In addition, we note that section 706 promotes the deployment of "high-speed, switched, broadband

[729] *See, e.g., Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Universal Service Obligations of Broadband Providers*, CC Docket Nos. 02-33, 95-20, 98-10, Notice of Proposed Rulemaking, 17 FCC Rcd 3019 (2002) (*Wireline Broadband NPRM*); *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, Notice of Proposed Rulemaking, 16 FCC Rcd 22745, 22747, para. 4 (2001) (*Dom/Non-Dom NPRM*).

[730] 47 U.S.C. § 157 nt.

[731] *Id.*

[732] With regard to the Commission's authority to "consider other elements" under the "at a minimum" language, the Court of Appeals for the D.C. Circuit has stated, "[w]e assume in favor of the Commission that is so." *USTA*, 290 F.3d at 425.

telecommunications capability," which counsels in favor of measures aimed at spurring the deployment of packet-switching technologies.[733]

243. Upgrading telecommunications loop plant is a central and critical component of ensuring that deployment of advanced telecommunications capability to all Americans is done on a reasonable and timely basis and, therefore, where directly implicated, our policies must encourage such modifications. Although a copper loop can support high transmission speeds and bandwidth, it can only do so subject to distance limitations and its broadband capabilities are ultimately limited by its technical characteristics.[734] The replacement of copper loops with fiber will permit far greater and more flexible broadband capabilities.[735] Although both the material used in the transmission path and the attached equipment work together to enable broadband capabilities, the record shows that, of the two, it is the upgrade to the transmission path (the loop) that is, by far, the more costly, complex, and risky endeavor.

244. In establishing our unbundling requirements, we consider our section 706 mandate in light of the technical characteristics of local loops. As we discuss in more detail below, we determine that our obligation to ensure the deployment of advanced telecommunications capability under section 706 warrants different approaches with regard to existing loop plant and new loop plant. With existing copper loops, all investment in advanced telecommunications capability is necessarily limited to the equipment, not the transmission facility. Therefore, our obligation to encourage infrastructure investment tied to legacy loops is more squarely driven by facilitating competition and promoting innovation. Because the incumbent LEC has already made the most significant infrastructure investment, *i.e.*, deployed the loop to the customer's premises, we seek, through our unbundling rules, to encourage both intramodal and intermodal carriers (in addition to incumbent LECs) to enter the broadband mass market and make infrastructure investments in equipment. In addition, we seek to promote the deployment of equipment that can unleash the full potential of the embedded copper loop plant so that consumers can experience enhanced broadband capabilities before the mass deployment of fiber loops. We expect that more innovative products and services will follow the deployment of new loop plant and associated equipment. With new loop plant, however, encouraging infrastructure investment must be balanced between ensuring that incumbent LECs retain adequate incentives to upgrade their loop plant and ensuring that competition continues to drive the deployment of innovative broadband services. These considerations come into play most acutely in determining

[733] 47 U.S.C. § 157 nt. Section 706 defines "advanced telecommunications capability" as "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."

[734] *Line Sharing Order*, 14 FCC Rcd at 20919, para. 8 n.9.

[735] BROADBAND: BRINGING HOME THE BITS, *supra* note 707, at 129-30; Corning Comments at 2; Letter from Timothy Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, FTTH Council Attach. at 28 (filed Jan. 29, 2003) (Corning Jan. 29, 2003 *Ex Parte* Letter).

the appropriate unbundling requirements for loops used to provide broadband service to the mass market.[736]

245. *Intermodal Competition.* Upon review of the extensive record on intermodal competition compiled in this proceeding, we determine that, although the existence of intermodal loops does not warrant a finding of no impairment, such competition is a factor to consider in establishing our unbundling requirements. We have discussed the competitive characteristics of intermodal loops in preceding paragraphs. Indeed, the broadband competition posed by cable operators in the mass market supports our decision to refrain from unbundling requirements on the features, functions, and capabilities of certain types of loops. Similarly, the state of intermodal competition, including competition from wireless telephony, in the mass market for narrowband services supports our approach to unbundling the legacy loops of incumbent LECs. Neither wireless nor cable has blossomed into a full substitute for wireline telephony. In addition, because wireless does not yet demonstrate the technical characteristics necessary to provide broadband services, unbundling incumbent LEC legacy loops is necessary for mass market consumers to realize the benefits of competition both for narrowband and broadband services, as well as both combined as a bundle.

246. There appear to be a number of promising access technologies on the horizon[737] and we expect intermodal platforms to become increasingly a substitute for wireline voice telephony services and for wireline broadband services. As we continue to assess impairment in the future, we recognize that the increased presence of viable alternative platforms may help increase competitive alternatives, both retail and wholesale, in the narrowband and broadband mass markets. The presence of such alternatives in the future may enable us to find that requesting carriers are no longer impaired in their ability to compete without access to incumbent LEC loops.[738]

(v) Specific Unbundling Requirements for Mass Market Loops

247. In this section, we address the specific unbundling requirements for mass market loops. We address the requirements based on the three primary types of local loops noted above, *i.e.*, copper loops, FTTH loops, and hybrid fiber/copper loops.

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[736] We note that one party, Corning, requested that the Commission forbear from imposing on incumbent LECs the resale requirements set forth in section 251(c)(4) for FTTH loops. Corning Comments at 31-33. Obviously, Corning's request is outside the scope of this proceeding and, thus, we will not address it in this Order.

[737] *See, e.g., Third Section 706 Report 2002*, 17 FCC Rcd at 2877-80, paras. 79-88 (describing other potential intermodal platforms capable of providing broadband service).

[738] We note that the impairment standard set forth in section 251 is different from, and does not prejudge, the standard we use to assess a carrier's dominant or non-dominant status. *See Dom/Non-Dom NPRM.*

(a) Legacy Networks

248. *Stand-Alone Copper Loops.* As discussed above, we find that requesting carriers are generally impaired on a national basis without unbundled access to an incumbent LEC's local loops, whether they seek to provide narrowband or broadband services, or both.[739] However, we determine that unbundled access to conditioned, stand-alone copper loops (which, of course, may be shared between two competitive LECs as discussed below) is sufficient to overcome such impairment for the provision of broadband services. Consequently, we find that, subject to the grandfather provision and transition period explained below, incumbent LECs do not have to unbundle the HFPL for requesting telecommunications carriers.

249. With more than 6 million kilometers of copper cable deployed, it is clear that copper remains the predominant loop type serving the mass market[740] and no party seriously asserts that stand-alone copper loops should not be unbundled in order to provide services to the mass market.[741] To address the impairment discussed above, we conclude that incumbent LECs must provide unbundled access to local loops comprised of copper wire.[742] That is, incumbent LECs shall provide, as a UNE, access to the complete transmission path comprised of a copper local loop between the central office and the customer's premises. The copper loop network element is a single local loop, including all intermediate devices (*e.g.*, repeaters, load coils) used to establish the transmission path. Consistent with the definition the Commission adopted in the *UNE Remand Order*, this complete transmission path between the incumbent LEC's main distribution frame (or its equivalent) in its central office and the demarcation point at the customer's premises[743] also includes the features, functions, and capabilities of the copper loop.[744] We include within this network element all local loops comprised of copper cable, including two- and four-wire analog voice-grade loops, digital loops (*e.g.*, DS0s and ISDN lines) and two- and four-wire loops conditioned to transmit the digital signals needed to provide xDSL service. Consistent with their obligation to provide unbundled local loops on just, reasonable, and

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[739] *See* our discussion of the high fixed and sunk costs, large economies of scale, and operational barriers such as rights-of-way, *supra* Part VI.A.4.a(iv)(a).

[740] *See Statistics of Communications Common Carriers September 2002 Report* at Table 2.2.

[741] *See, e.g.*, SBC Reply at 109 (stating that competitive LECs have "ample opportunity to offer voice and data over the legacy network" and can "access the copper distribution subloop at the first accessible point in the ILEC's network . . . and use it to provision DSL service."). In addition, we note that some commenters assumed continued unbundling of loops to support their argument that UNE-P is unnecessary. *See, e.g.*, Verizon Reply at 113 (arguing that UNE-P is unnecessary because a competitive LEC could simply "use hot cuts and a UNE-L strategy to serve mass market customers.").

[742] To be clear, we require incumbent LECs to unbundle both existing copper loops and copper loops as they are newly deployed.

[743] As discussed below, this also includes any inside wire owned by the incumbent LEC. *See infra* Part VI.B.2 (discussing inside wire).

[744] As noted above, the Act defines the term "network element" as "a facility or equipment used in the provision of a telecommunications service. Such term also includes features, functions, and capabilities that are provided by means of such facility or equipment." 47 U.S.C. § 153(29).

nondiscriminatory terms and conditions, incumbent LECs must provide the requesting carriers with nondiscriminatory access to the same detailed information about the loop that is available to the incumbent LEC in the same time intervals it is provided to the incumbent LEC's retail operations.[745] We note that our requirements for stand-alone copper loops apply to both copper loops that are in active service and those that are deployed in the network as spares.[746]

250. The practical effect of this unbundling requirement is to ensure that requesting carriers have access to the copper transmission facilities they need in order to provide narrowband or broadband services (or both) to customers served by copper local loops. We understand that this unbundling obligation may require an incumbent LEC to provide the functionality available in certain equipment, as well as to remove the functionality from other equipment (*i.e.*, to condition the loop), in order to provide a complete transmission path between its main distribution frame (or equivalent) and the demarcation point at the customer's premises.[747] As noted elsewhere in this Order, we find that line conditioning constitutes a form of routine network modification that must be performed at the competitive carrier's request to ensure that a copper local loop is suitable for providing xDSL service.[748]

251. *Line Splitting*. We find that when competitive carriers opt to take an unbundled stand-alone loop, the incumbent LEC must provide the requesting carrier with the ability to engage in line splitting arrangements. We use the term "line splitting" to describe the scenario where one competitive LEC provides narrowband voice service over the low frequency of a loop and a second competitive LEC provides xDSL service over the high frequency portion of that same loop. The Commission previously found that existing rules require incumbent LECs to

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[745] *See supra* Part VI.I (discussing incumbent LECs' OSS obligations); *see also UNE Remand Order*, 14 FCC Rcd at 3884-87, paras. 426-31 (requiring incumbent LECs to provide, among other things, the composition of the loop material; the existence, location and type of any electronic or other equipment on the loop; the loop length; the wire gauge(s) of the loop; and the electrical parameters of the loops); *Line Sharing Order*, 14 FCC Rcd at 20958-73, paras. 96-130; 47 C.F.R. § 51.319(g).

[746] These requirements also include the obligation to condition the spare pair so that the requesting carrier may provide xDSL service. As Qwest points out, when incumbent LECs construct new loop plant, they frequently overlay fiber facilities that supplement existing loops. Qwest Comments at 45; *see* Alcatel Comments at 16 (noting that, when incumbent LECs deploy fiber loops, competitive LECs would continue to maintain access to legacy copper transmission facilities). Thus, the construction of new facilities does not in itself alter a competitive LEC's ability to use the incumbent LEC's network. Qwest explains that it "does not proactively remove copper facilities in the case of an overlay" so that requesting carriers should be able to continue providing service in these circumstances. Qwest Comments at 45-46.

[747] As discussed in Part VI.A. *infra*, we readopt incumbent LECs' line conditioning obligations. The Commission noted in its *Line Sharing Order* that devices such as load coils and bridged taps interfere with the provision of xDSL service and, absent a certain showing by the incumbent LEC to the relevant state commission, must be removed at the request of the competitive LEC. *See Line Sharing Order*, 14 FCC Rcd at 20952-54, paras. 83-86. We determine that, upon the competitive LEC's request, incumbent LECs must similarly condition unbundled stand-alone loops to make them xDSL-compatible.

[748] We also require such conditioning for the HFPL consistent with the grandfather provision and transition period described below. *See Line Sharing Order*, 14 FCC Rcd at 20952-54, paras. 83-87.

permit competing carriers to engage in line splitting where a competing carrier purchases the whole loop and provides its own splitter to be collocated in the central office.[749] We reaffirm those requirements but, for purposes of clarity and ensuring regulatory certainty, we find that it is appropriate to adopt line splitting-specific rules.

252. Included among these rules is the requirement that incumbent LECs modify their OSS in such a manner as to facilitate line splitting. We also readopt the Commission rules requiring incumbent LECs to provide access to physical loop test access points on a nondiscriminatory basis for the purpose of loop testing, maintenance, and repair activities, and allowing incumbent LECs to maintain control over the loop and splitter equipment and functions in certain circumstances. We do not anticipate that the incumbent LECs will have any difficulty implementing such an obligation because the Commission required as much from them in its *Line Sharing Reconsideration Order*.[750] Furthermore, so long as the unbundled loop-switch combination is permitted in a particular state, the rules make clear that incumbent LECs must permit competitive LECs providing voice service through that arrangement to line split with another competitive LEC.[751] As the Commission did before, we encourage incumbent LECs and competitors to use existing state commission collaboratives and change management processes to address OSS modifications that are necessary to support line splitting.[752]

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[749] *See Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Texas*, CC Docket No. 00-65, Memorandum Opinion and Order, 15 FCC Rcd 18354, 18515-16, paras. 324-25 (2000) (*SWBT Texas 271 Order*); *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, Third Report and Order on Reconsideration in CC Docket No. 98-147, Fourth Report and Order on Reconsideration in CC Docket No. 96-98, Third Further Notice of Proposed Rulemaking in CC Docket No. 98-147, Sixth Further Notice of Proposed Rulemaking in CC Docket No. 96-98, 16 FCC Rcd 2101, 2109-14, paras. 16-26 (2001) (*Line Sharing Reconsideration Order*). These orders expressly determined that rules 51.307(c) (requiring incumbent LECs to provide unbundled access to a UNE in a manner that "allows the requesting telecommunications carrier to provide any telecommunications service that can be offered by means of that network element") and 51.309(a) (prohibiting an incumbent LEC from imposing "limitations, restrictions, or requirements on . . . the use of unbundled network elements that would impair the ability of a requesting telecommunications carrier to offer a telecommunications service in the manner" the requesting carrier intends) require incumbent LECs to permit line splitting.

[750] *See Line Sharing Reconsideration Order*, 16 FCC Rcd at 2111, para. 20 (requiring incumbent LECs to make all necessary network modifications, including providing nondiscriminatory access to OSS necessary for pre-ordering, ordering, provisioning, maintenance and repair, and billing for loops used in line splitting arrangements). For the reasons explained herein, we grant WorldCom's request for clarification that requesting carriers may engage in line splitting. MCI WorldCom Petition for Clarification, CC Docket No. 96-98 at 10 (filed Feb. 17, 2000) (MCI WorldCom Feb. 17, 2000 Petition for Clarification).

[751] Again, the Commission required this in an earlier order. *See Line Sharing Reconsideration Order*, 16 FCC Rcd at 2110-11, para. 19.

[752] *See id.* at 2111-12, para. 21. We note with support the work already performed by state commissions in this area and we encourage states to continue overseeing and participating in such collaboratives. *See, e.g.*, New York Department Comments at 6-7. Some commenters claimed that BOCs reject competitive LEC xDSL orders because the BOCs are not the local voice provider and they refuse to coordinate the HFPL order with the voice competitive LEC. *See, e.g.*, WorldCom Comments, Declaration of Ian Graham (WorldCom Graham Decl.) at para. 33. We do (continued....)

253. *Unbundled Access to Copper Subloops.* We require incumbent LECs to provide unbundled access to their copper subloops, *i.e.*, the distribution plant consisting of the copper transmission facility between a remote terminal and the customer's premises.[753] We conclude that our impairment finding extends to copper subloops because they are part and parcel of the local loop plant of incumbent LECs – requesting carriers face precisely the same barriers to entry for a subloop as with a copper loop that extends from the incumbent LEC's central office to the customer's premises. Indeed, we note that several incumbent LECs argue that accessing copper subloops provides competitive LECs with sufficient access to the loop for the provision of the services that they seek to provide.[754] Consistent with our section 706 goal to spur deployment of advanced telecommunications capability, we do not require incumbent LECs to provide access to their fiber feeder loop plant on an unbundled basis as a subloop UNE. As explained below, in light of our decision to refrain from unbundling the packetized capabilities of incumbent LECs, incumbent LECs will provide access to their fiber feeder plant only to the extent their fiber feeder plant is necessary to provide a complete transmission path between the central office and the customer premises when incumbent LECs provide unbundled access to the TDM-based capabilities of their hybrid loops. We encourage parties to negotiate access arrangements that would facilitate competitive LEC access to copper subloops. Specifically, we expect that incumbent LECs will develop wholesale service offerings for access to their fiber feeder to ensure that competitive LECs have access to copper subloops. Of course, the terms and conditions of such access would be subject to sections 201 and 202 of the Act.[755]

254. We define the copper subloop UNE as the distribution portion of the copper loop that is technically feasible to access at terminals in the incumbent LEC's outside plant (*i.e.*, outside its central offices), including inside wire.[756] We find that any point on the loop where technicians can access the cable without removing a splice case constitutes an accessible terminal. As HTBC points out, a non-exhaustive list of these points includes the pole or pedestal, the serving area interface (SAI), the NID itself, the MPOE, the remote terminal, and the

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expect incumbent LECs to implement, in a timely fashion, "practical and reasonable measures" to enable competitive LECs to line split. *Id.*

[753] Letter from Derek R. Khlopin, High Tech Broadband Coalition, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. at 2 (filed Feb. 14, 2003) (HTBC Feb. 14, 2003 *Ex Parte* Letter) (submitting proposed rule language).

[754] Qwest Comments at 46; SBC Comments at 53-54; Verizon Comments at 89 n.296.

[755] For example, incumbent LECs could develop, and provide pursuant to sections 201/202 of the Act, telecommunications services that are similar to the special access services they already provide. Such services would, in effect, offer competitive LECs access to the shared fiber feeder plant (and any necessary cross-connections or similar functions) in order to obtain access to equipment in a remote terminal or to the copper subloop itself. We note that at least one incumbent LEC has supported making available wholesale broadband service offerings because such arrangements would make commercial sense. *See, e.g.*, Verizon Comments at 82 (arguing that incumbent LECs should be permitted to offer wholesale broadband services in lieu of unbundling its broadband network equipment and facilities). *But see* WorldCom Reply at 120-21 (criticizing Verizon's proposal).

[756] HTBC Feb. 14, 2003 *Ex Parte* Letter at 2 (submitting proposed rule language).

feeder/distribution interface. To facilitate competitive LEC access to the copper subloop UNE, we require incumbent LECs to provide, upon a site-specific request, access to the copper subloop at a splice near their remote terminals.[757] With respect to the copper subloop, in addition to providing greater specificity of access points consistent with the HTBC proposal, we readopt our previous requirements for providing unbundled access to subloop UNEs. Unlike our previous subloop unbundling rules, however, the rules we adopt herein do not require incumbent LECs to provide unbundled access to their feeder loop plant as stand-alone UNEs, thereby limiting incumbent LEC subloop unbundling obligations to their distribution loop plant.

255. *High Frequency Portion of the Loop.* Although we make the whole copper loop and the copper subloop available to requesting carriers as UNEs, along with the ability to engage in line splitting, some parties have requested that we also make available the high frequency portion of the copper loop. For reasons we discuss below, we decline to do so except as specified on a grandfathered basis. As an initial matter, we use the term "line sharing" to describe when a competing carrier provides xDSL service over the same line that the incumbent LEC uses to provide voice service to a particular end user, with the incumbent LEC using the low frequency portion of the loop and the competing carrier using the HFPL. Continued access to the incumbent LEC's conditioned, stand-alone copper loops and subloops enables a requesting carrier to offer and recover its costs from all of the services that the loop supports, including xDSL service.[758] Commenters have not argued that it is technically infeasible to provide xDSL service over a stand-alone copper loop nor have they argued that it is technically infeasible to provide xDSL service over a line split loop (*i.e.*, a loop that is shared by two competitive LECs – one offering voice service and the second offering xDSL service). Advocates for reinstating unbundled access to the HFPL instead offer various economic and operational reasons for why they would be impaired without such access, generally reiterating the same reasons that were offered in the Commission's original line sharing proceeding in 1999.[759]

256. As we noted above, the D.C. Circuit vacated these rules and directed the Commission to apply some limiting standard rationally related to the goals of the Act.[760] The D.C. Circuit stated that the Commission must weigh the costs associated with unbundling in making its section 251(d)(2) determinations.[761] More generally, the D.C. Circuit explained that

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[757] *Id.*

[758] Moreover, as explained above, the Commission reaffirms the incumbent LECs' obligation to permit line splitting so that a competitive LEC seeking only to offer xDSL service (*i.e.*, a data LEC) may partner with a voice-only competitive LEC to provide the service – xDSL – that the data LEC offered under the Commission's now-vacated rules.

[759] *Line Sharing Order*, 14 FCC Rcd at 20931-38, paras. 38-53.

[760] *USTA*, 290 F.3d at 429 (citing *Iowa Utils. Bd.*, 525 U.S. at 386-88). The D.C. Circuit also cautioned the Commission against imposing the costs of unbundling if doing so would not bring on a significant enhancement of competition. *Id.*

[761] *Id.* at 429.

the Commission must make an effort to balance these costs against the benefits of unbundling.[762] It is against this backdrop that the Commission makes its decision on line sharing.

257. In its *Line Sharing Order*, the Commission found that competitive LECs were impaired without unbundled access to the HFPL because, among other things, purchasing a stand-alone loop would be too costly for carriers seeking to offer only broadband service.[763] It also determined that requiring these carriers to offer voice service in order to provide xDSL service would impose on them the cost of providing circuit-switched voice services, which includes the development of marketing, billing, and customer care infrastructure to serve the needs of voice customers.[764] In addition, the Commission found no evidence that requesting carriers could obtain the HFPL from another competitive LEC (*i.e.*, what the Commission subsequently termed "line splitting").[765]

258. As an initial matter, we disagree with the Commission's prior finding that competitive LECs are impaired without unbundled access to the HPFL because purchasing a stand-alone loop would be too costly for carriers seeking to offer a broadband service. Whereas in the *Line Sharing Order*, the focus was only on the revenues derived from an individual service, our focus is on the all potential revenues derived from using the full functionality of the loop. As stated above, the impairment standard we adopt today considers whether *all* potential revenues from entering a market exceed the costs of entry, taking into account consideration of any advantages a new entrant may have.[766] Thus, in the instant case, we take into the account the fact that there are a number of services that can be provided over the stand-alone loop, including voice, voice over xDSL (i.e., VoDSL), data, and video services. In so doing, we conclude that the increased operational and economic costs of a stand-alone loop (including costs associated with the development of marketing, billing, and customer care infrastructure) are offset by the increased revenue opportunities afforded by the whole loop.

259. Moreover, we can no longer find that competitive LECs are unable to obtain the HFPL from other competitive LECs through line splitting. For example, the largest non-incumbent LEC provider of xDSL service, Covad, recently announced plans to offer ADSL service to "more of AT&T's 50 million consumer customers" through line splitting.[767] In

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[762] *Id.* at 427, 429.

[763] *Line Sharing Order*, 14 FCC Rcd at 20932-35, paras. 39-43.

[764] *Id.* at 20936, para. 48.

[765] *Id.* at 20938, para. 53.

[766] *See supra* para. 84.

[767] *See* Covad Communications, *AT&T and Covad Extend Residential DSL Relationship*, Press Release (dated Jan. 6, 2003) <http://www.covad.com/companyinfo/pressroom/pr_2003/010603_press.shtml> (stating that this agreement will enable more of AT&T's 50 million consumer customers to obtain xDSL service through Covad's network, which itself covers more than 40 million households and businesses nationwide). We thus do not find credible Covad's argument that the Commission's previous finding, that there are no third-party alternatives to the incumbent LEC's HFPL, remains valid. *See* Covad Comments at 42.

addition, in the 1999 *Line Sharing Order*, the Commission relied on the marketplace conditions present at the time to justify, at least partially, its decision to unbundle the HFPL. Specifically, the Commission noted the nascency of local competition and the lack of viable alternatives for a provider of broadband services.[768] Although we recognize that these circumstances have not been completely reversed, significant strides have been made by competitors in the local market. Competitors now serve more than three times the number of voice customers that were served in 1999.[769] Moreover, the conditions for further competitive entry are much better established as evidenced by the Commission's approval of 43 section 271 applications, which requires the Commission to find that the local telephone market is open to competition in a particular state, since 1999.[770] Since some incumbent LECs have thus far refused to provide xDSL service to customers that obtain voice service from a competitive LEC, by necessity, any of the over 11 million voice customers served by competitive LECs who seek xDSL service would have to obtain that service from a competing carrier.[771]

260. We find that allowing competitive LECs unbundled access to the whole loop and to line splitting but not requiring the HFPL to be separately unbundled creates better competitive incentives than the alternatives. This is largely due to the difficulties in pricing the HFPL as a separate element. As we explained in the *Line Sharing Order*, the same physical loop is used for multiple services, and there is no single correct method for allocating loop costs among these services and the HFPL.[772] Pricing the HFPL thus creates a dilemma: either incumbent LECs are allowed to over-recover their loop costs by fully charging for both the HFPL and the low frequency portion of the loop, or competitive LECs are allowed to purchase the HFPL at a price of roughly zero.[773] Following our pricing rules, most states did the latter.[774] The result is that competitive LECs purchasing only the HFPL have an irrational cost advantage over competitive LECs purchasing the whole loop and over the incumbent LECs. In contrast, allowing competitive LECs unbundled access to the whole loop and to line splitting but not requiring the

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[768] *See, e.g., Line Sharing Order*, 14 FCC Rcd at 20938, 20939-40, paras. 53, 56.

[769] *See Local Telephone Competition December 2002 Report* at Table 2 (comparing 3.4 million mass market customers in December 1999 with over 11 million mass market customers in June 2002). We also note that several voice providers, AT&T and WorldCom, subsequently purchased the assets of two former data LECs: NorthPoint and Rhythms NetConnections, respectively. *See, e.g.*, WorldCom Reply, Reply Declaration of Ian Graham (WorldCom Graham Reply Decl.) at para. 1.

[770] We note that in 1999, only one state, New York, had been granted section 271 authority. Since then, the Commission has approved section 271 applications in 42 other states (including the District of Columbia).

[771] *See Local Telephone Competition December 2002 Report* at Table 2. As noted by WorldCom, the need for line splitting is likely to grow as penetration by competitive voice providers increases. WorldCom Comments at 104.

[772] *Line Sharing Order*, 14 FCC Rcd at 20975, para. 138; *see also Intercarrier Compensation NPRM*, 16 FCC Rcd at 9625, para. 39 (describing generally the difficulties associated with allocating common costs among services).

[773] *Line Sharing Order*, 14 FCC Rcd at 20975, para. 137.

[774] *See, e.g.*, Covad Dec. 27, 2002 *Ex Parte* Letter at 6 (noting that 73% of the states in which Covad does business have approved a zero rate for the HFPL). *See also CALLS Order*, 15 FCC Rcd at 13001, para. 98 (stating that, as of 2000, the Commission was unaware of any incumbent LEC allocating any loop costs to ADSL service).

HFPL to be separately unbundled puts competitive LECs using only the HFPL in a more fair competitive position with respect to other competitive LECs and to the incumbent LECs. Each carrier faces the same loop costs and, it if wishes, each can partner with another carrier to provide service over the HFPL alone or the low frequency portion of the loop alone as it wishes.

261. We expressly reject the Commission's earlier finding that "line sharing will level the competitive playing field . . . ."[775] In fact, rules requiring line sharing may skew competitive LECs' incentives toward providing a broadband-only service to mass market consumers, rather than a voice-only service or, perhaps more importantly, a bundled voice and xDSL service offering. In addition, readopting our line sharing rules on a permanent basis would likely discourage innovative arrangements between voice and data competitive LECs and greater product differentiation between the incumbent LECs' and the competitive LECs' offerings. We find that such results would run counter to the statute's express goal of encouraging competition and innovation in all telecommunications markets.

262. Furthermore, in vacating the Commission's line sharing rules, the D.C. Circuit found that the Commission failed to consider the relevance of broadband competition coming from cable and, to a lesser extent, satellite providers.[776] The Commission staff's *High Speed Services December 2002 Report* shows that, nationally, cable modem service is the most widely used means by which the mass market obtains broadband service.[777] Indeed, two reports show that the gap between cable modem and ADSL subscribership continues to widen.[778]

263. As discussed earlier, the Commission also has acknowledged the important broadband potential of other platforms and technologies, such as third generation wireless, satellite, and power lines.[779] Although cable modem's lead in broadband deployment is not dispositive in our impairment analysis,[780] the fact that broadband service is actually available through another network platform and may potentially be available through additional platforms helps alleviate any concern that competition in the broadband market may be heavily dependent upon unbundled access to the HFPL. Indeed, as noted by Allegiance, the existence of some

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[775] *Line Sharing Order*, 14 FCC Rcd at 20930-31, para. 35.

[776] *USTA*, 290 F.3d at 428.

[777] *See High Speed Services December 2002 Report* at Table 5 (noting that cable modem service is provided over nine million lines, which is approximately 57% of all high-speed lines).

[778] *Compare* Industry Analysis and Technology Division, Wireline Competition Bureau, *High Speed Services July 2002 Report* at Table 5 (noting that the difference in number of high-speed lines served by cable modem service and ADSL service was 3.11 million as of December 2001) *with High Speed Services December 2002 Report* at Table 5 (noting that the difference in number of high-speed lines served by cable modem service and ADSL service was 4.07 million as of June 2002).

[779] *See, e.g., Third Section 706 Report 2002*, 17 FCC Rcd at 2877-81, paras. 79-88.

[780] *See supra* Part V.B. (discussing intermodal alternatives in the general impairment Part of this Order).

measure of intermodal alternatives in the residential market lessens the benefits of unbundling.[781] Given that the whole loop is available, on an unbundled basis, we find that the costs of unbundling the HFPL outweigh the benefits when taking into account the skewed entry incentives discussed above. Moreover, we anticipate that the Commission's decisions in this Order and other proceedings will encourage the deployment of new technologies providing the mass market with even more broadband options.[782]

264. *Line Sharing Transition.* We recognize that a number of competitive LECs have relied on the existence of line sharing to provide broadband service to end users since the adoption of the *Line Sharing Order.* These carriers have built internal systems to order the HFPL from incumbent LECs and have designed products that depend on line sharing as an input. In order to ensure that these carriers have adequate time to implement new internal processes and procedures, design new product offerings, and negotiate new arrangements with incumbent LECs to replace line sharing, we adopt a three-year transition period for new line sharing arrangements of requesting carriers.[783] In addition, until the next biennial review, a proceeding that will

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[781] *See* Letter from Thomas Jones, Counsel for Allegiance, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 2 (filed Feb. 13, 2003) (Allegiance Feb. 13, 2003 *Ex Parte* Letter).

[782] Chairman Powell claims that our decision on line sharing contains some compromises, which, he contends, are improper. *Chairman Powell Statement* at 15-16. There is nothing improper about our decision. The Commission is composed of five people, each of whom sometimes has a different view of the right answer. When that occurs, it is essential to work together to find common ground, or else the agency cannot function. Compromise is inherently part of that process, and "good public policy often must be[] a balanced compromise of conflicting values and judgments." Separate Statement of Commissioner Michael K. Powell, *Review of the Commission's Regulations Governing Attribution of Broadcast and Cable/MDS Interests*, Report and Order, 14 FCC Rcd 12559, 12669 (1999); *see also* Separate Statement of Commissioner Michael K. Powell, *1998 Biennial Regulatory Review Spectrum Aggregation Limits for Wireless Telecommunications Carriers*, Report and Order, 15 FCC Rcd. 9219, 9296-97 (1999) ("Well, this time we are not doing much to modify or eliminate the rule and I do not agree with all of the findings and competitive analysis in the item. . . . Most importantly, in the spirit of compromise, the item recognizes three things that I find somewhat comforting in my decision today to support the item."). In fact, "compromise . . . is within the Commission's purview," *Interstate Natural Gas Ass'n v. FERC*, 285 F.3d 18, 36 (D.C. Cir. 2002), so long as an "agency articulate[s] a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *Ass'n of American Railroads v. Surface Transp. Bd.*, 161 F.3d 58, 66 (D.C. Cir. 1998) (quoting *Michigan Consol. Gas Co. v. FERC*, 883 F.2d 117, 120-21 (D.C. Cir. 1989)) (quotation marks omitted). Here, we have offered a detailed justification of our actions. Specifically, as discussed, the Commission's previous decision to require line sharing was unequivocally vacated by the D.C. Circuit; the Commission's earlier assessment of costs and revenues from the local loop failed to consider all potential revenues; competitive LECs are now able to obtain the HFPL from other competitive LECs through line splitting; the Commission's previous line sharing rule created warped incentives, because there is no single correct method for allocating the costs attributable to the HFPL; and cable television providers, who are not subject to line sharing obligations, serve a majority of the current residential broadband customers, while incumbent LECs have only a fraction of this market share.

[783] In response to the transition mechanism for line sharing voted on February 20th, the dissent raised some concerns regarding aspects of the transition for existing customers that had not been previously discussed. Separate Statement of Commissioner Kathleen Q. Abernathy, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, CC Docket Nos. 01-338, 96-98, 98-147, FCC 03-36 (rel. Feb. 20, 2003) ("I am also troubled by the majority's decision to establish a three-year transition period for the elimination of line sharing. I believe that the majority should own up to the fact that, by cutting off data LECs' access to line sharing, it has shut down residential (continued....)

commence in 2004, we grandfather all existing line sharing arrangements unless the respective competitive LEC, or its successor or assign, discontinues providing xDSL service to that particular end-user customer. During this interim period, we direct incumbent LECs to charge competitive LECs the same price for access to the HFPL for those grandfathered customers that they charged prior to the effective date of this Order. Consistent with our stated policy goal of preventing harm to consumers caused by a discontinuance of service, we conclude that establishing a grandfathering rule is necessary to prevent consumers who currently rely on line sharing from losing their broadband service.[784] This interim grandfathering rule will help alleviate the impact of such a significant rule change on end-user customers.[785] Consistent with

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broadband competition over the copper loop. Any talk of a glide path is fanciful, because, in all likelihood, there will regrettably be no providers left to participate in a transition three years from now."); Separate Statement of Chairman Michael K. Powell, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, CC Docket Nos. 01-338, 96-98, 98-147, FCC 03-36 (rel. Feb. 20, 2003) ("By some estimates, 40% of DSL providers use line shared inputs. The decision to kill off this element and replace it with a transition of higher wholesale prices will lead quite quickly to higher retail prices for broadband consumers . . ."). As the Commission has concluded in other contexts, "some of those concerns were well thought out and prompted the majority to rethink its position and further explain its rationale. Those steps improved this Order --and in turn resulted in a higher quality product for the American people. At the end of the day that should be the goal of all the Commissioners." Joint Statement of Chairman Michael Powell and Commissioner Kathleen Q. Abernathy, *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range*, ET Docket No. 98-206, RM-9147, RM-9245, Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd 9614, 9807 (2002) (*Joint Statement of Chairman Powell and Commissioner Abernathy on Northpoint*). Those concerns prompted the majority to address the status of existing customers and further explain its rationale. The interim grandfathering rule we adopted improved this Order, responds to the dissenters' call for the need to strengthen the glide path we set forth on February 20th, and further ameliorates the immediate impact of our decision on retail prices for broadband consumers. In addition, immediate change of existing service may be unnecessary in light of frequent broadband customer churn and our effort to reevaluate the extent that grandfathered customers remain prior to the end of the three-year transition in the context of our next biennial review. While ideally we would engage in the dialogue at an earlier stage, "continuous improvement of our items is the right thing to do." *See id*; *see also infra* note 1396.

[784] *See e.spire Application to Discontinue Domestic and International Telecommunications Services*, Order, Comp. File No. 592, 17 FCC Rcd 14785, para. 1 (WCB 2002) (denying application to discontinue telecommunications service because such action would disrupt service to consumers); *Rhythms Link Inc. Section 63.71 Application to Discontinue Domestic Telecommunications Services*, Order, NSD File No. W-P-D-517, 16 FCC Rcd 17024, 17025, paras. 4, 13 (CCB 2001) (granting application to discontinue telecommunications service after determining that Rhythms gave proper notice to its customers, which resulted in most affected customers being migrated to other carriers without a service interruption).

[785] We note that both Qwest and Verizon suggested some form of grandfathering line sharing customers. For example, Qwest proposed grandfathering existing locations for line sharing. Qwest Comments at 44-45. Although Qwest's proposal was premised on the D.C. Circuit upholding the Commission's line sharing rules, we find that a modification of this proposal to address current marketplace conditions is appropriate. *Id.* at 45 n.115. Namely, instead of permitting competitive LECs to continue obtaining unbundled access to the HFPL at all current locations, which presumably would allow requesting carriers to add new subscribers served out of those locations, we limit this proposal to existing customers only. Even after issuance of the *USTA* decision, Verizon suggested grandfathering existing competitive LEC xDSL customers served over line shared loops. *See* Letter from William P. Barr, Verizon, to Michael Powell, Chairman, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 5 (filed Jan. 17, 2003) (Verizon Jan. 17, 2003 *Ex Parte* Letter) (noting that "[a]s a purely transitional measure . . . existing [line sharing] customers could (continued....)

our findings set forth above in Part V.E, if a decision taken pursuant to state law after this Order becomes effective were to require line sharing obligations, any party that believes such decision is inconsistent with the limits of section 251(d)(3)(B) and (C) may seek a declaratory ruling from this Commission.[786]

265. The three-year transition period for new line sharing arrangements will work as follows. During the first year, which begins on the effective date of this Order, competitive LECs may continue to obtain new line sharing customers through the use of the HFPL at 25 percent of the state-approved recurring rates or the agreed-upon recurring rates in existing interconnection agreements for stand-alone copper loops for that particular location.[787] During the second year, the recurring charge for such access for those customers will increase to 50 percent of the state-approved recurring rate or the agreed-upon recurring rate in existing interconnection agreements for a stand-alone copper loop for that particular location. Finally, in the last year of the transition period, the competitive LECs' recurring charge for access to the HFPL for those customers obtained during the first year after release of this Order will increase to 75 percent of the state-approved recurring rate or the agreed-upon recurring rate for a stand-alone loop for that location.[788] After the transition period, any new customer must be served through a line splitting arrangement, through use of the stand-alone copper loop, or through an arrangement that a competitive LEC has negotiated with the incumbent LEC to replace line sharing.[789] We strongly encourage the parties to commence negotiations as soon as possible so that a long-term arrangement is reached and reliance on the shorter-term default mechanism that we describe above is unnecessary.

266. The purpose of this transition is to minimize disruption to the customers that obtain xDSL service through line shared loops and to provide a reasonable glide path to competitive LECs currently availing themselves of this UNE. The Commission has established

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be grandfathered for some period of time."). As a practical matter, because of the churn rates associated with this industry, we find that our grandfathering requirement described above is not without end.

[786] *See supra* Part V.E for our discussion of the role of the states.

[787] We determine that it is appropriate to permit requesting carriers to continue obtaining new customers during the first year of the transition. This augmented customer base will enable requesting carriers, especially data LECs, to continue their day-to-day operations while modifying their business plans and working to preserve access arrangements with incumbent LECs. *See* Letter From Jason D. Oxman, Vice President and Assistant General Counsel, Covad, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 2 (Covad Feb. 24, 2003 *Ex Parte* Letter).

[788] After this third year, competitive LECs will not have unbundled access to the HFPL, pursuant to section 251(c)(3), to provide those customers obtained after the Order became effective xDSL service over line shared loops. That is, after this third year, the recurring charge for the HFPL increases to 100% of the recurring charge for a stand-alone loop.

[789] By new customers, we mean any customer obtained during the three-year transition period or after the three-year transition period. New customers do not include, however, those line sharing customers who have been grandfathered, as described above in para. 264.

transition periods of this length in the past. For example, in establishing a three-year interim intercarrier compensation regime for ISP-bound traffic, the Commission stated that it would be "prudent to avoid a 'flash cut' to a new compensation regime that would upset the legitimate business expectations of carriers and their customers."[790] We find that a similar approach is required here. It is entirely appropriate to fashion a transition period of sufficient length to enable competitive LECs to move their customers to alternative arrangements and modify their business practices and operations going forward.[791]

267. As one commenter noted in describing the Commission's authority to establish interim rates for unbundled local circuit switching, in combination with other elements, inherent in the Commission's authority to establish transitional rules is its authority to establish transitional rates.[792] Section 201(b) gives the Commission broad authority to adopt the transition mechanism set forth in this Part and nothing in that provision limits our authority with respect to rates. Indeed, we agree with those commenters that contend that a transitional rate is often the most effective means by which to implement a "glide path from one regulatory/pricing regime to another."[793] The incremental approach we adopt here will encourage requesting carriers either to migrate their customers to the whole loop in an orderly manner or to reach agreement, if it is desired, with the incumbent LEC to continue access to the HFPL on different terms and conditions.

268. In order to implement the line sharing transition plan described above, we find that it is necessary to reinstate certain rules concerning the HFPL.[794] Specifically, we define the HFPL as the frequency range above the voiceband on a copper loop facility that is being used to carry analog circuit-switched voiceband transmissions.[795] The features, functions, and capabilities of the HFPL network element are those that establish a complete transmission path on the frequency range above the one used to carry analog circuit-switched voice transmissions between the incumbent LEC's distribution frame (or its equivalent) in its central office and the demarcation point at the customer's premises, and includes any inside wire owned by the

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[790] *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Intercarrier Compensation for ISP-Bound Traffic*, CC Docket Nos. 96-98, 99-68, Order on Remand and Report and Order, 16 FCC Rcd 9151, 9186-87, paras. 77-78 (2001) (*ISP Remand Order*).

[791] *See, e.g.*, Letter from Susan Guyer and Michael Glover, Verizon, to William F. Maher, Chief, Wireline Competition Bureau, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 4 (filed Jan. 10, 2003).

[792] *See* Letter from Gary L. Phillips, Counsel for SBC, to Michael K. Powell, Chairman, FCC, CC Docket No. 01-338 at 2 (filed Dec. 19, 2002) (SBC Dec. 19, 2002 *Ex Parte* Letter) (citing the Commission's *ISP Remand Order*).

[793] *Id.*

[794] To be clear, although the D.C. Circuit referred broadly to vacating the *Line Sharing Order*, it did not address the Commission's spectrum management rules or that portion of the order in its decision. Consequently, the Commission finds that these rules were unaffected by the *USTA* decision and therefore do not need to be readopted because they remain in effect. *See, e.g.*, 47 C.F.R. §§ 51.230-.233. Finally, we find no reason to modify these rules in this Order.

[795] 47 C.F.R. § 51.319(h)(1); *Line Sharing Order*, 14 FCC Rcd at 20926-27, para. 26.

incumbent LEC. Incumbent LECs must condition loops to enable requesting carriers to access the HFPL.[796] Finally, incumbent LECs must provide physical loop test access points on a nondiscriminatory basis for the purposes of loop testing, maintenance, and repair activities.[797]

269. In addition, incumbent LECs are only required to provide access to the HFPL if the incumbent LEC is providing, and continues to provide, analog circuit-switched voiceband services on the particular loop over which the requesting carriers seeks access to provide ADSL service.[798] In the event that the customer ceases purchasing voice service from the incumbent LEC, either the new voice provider or the xDSL provider, or both, must purchase the full stand-alone loop to continue providing xDSL service. Finally, as the Commission found before, incumbent LECs may also maintain control over the loop and splitter equipment and functions.[799]

270. *Low Frequency Portion of the Loop.* We disagree with CompTel that we should separately unbundle the low frequency portion of the loop, which is the portion of the copper local loop used to transmit voice signals.[800] We conclude that unbundling the low frequency portion of the loop is not necessary to address the impairment faced by requesting carriers because we continue (through our line splitting rules) to permit a narrowband service-only competitive LEC to take full advantage of an unbundled loop's capabilities by partnering with a second competitive LEC that will offer xDSL service.

271. *Retirement of Copper Loops and Copper Subloops.* As we note below in our discussion of FTTH loops, we decline to prohibit incumbent LECs from retiring copper loops or copper subloops that they have replaced with fiber. Instead, we reiterate that our section 251(c)(5) network modification disclosure requirements (with the minor modifications also noted below in that same discussion) apply to the retirement of copper loops and copper subloops.[801] In

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[796] *Line Sharing Order*, 14 FCC Rcd at 20952-54, paras. 83-87; 47 C.F.R. § 51.319(h)(5). Included among the incumbent LECs' conditioning requirements that we reinstate is the requirement that, after determining that conditioning a loop will significantly degrade the voiceband service offered by the incumbent LEC on that loop, the incumbent LEC must either locate another loop and migrate its voice service to that loop while providing the requesting carrier with access to the HFPL, or demonstrate to the relevant state commission that the loop cannot be conditioned without significantly degrading the voiceband service and no alternative loop exists to which the customer's voiceband service can be moved to enable line sharing. *See* 47 C.F.R. § 51.319(h)(5)(ii); *see also infra* Part VII.D (discussing modifications to the existing network).

[797] *See Line Sharing Order*, 14 FCC Rcd at 20964-67, paras. 111-18; 47 C.F.R. § 51.319(h)(7).

[798] *Line Sharing Order*, 14 FCC Rcd at 20947, para. 72; 47 C.F.R. § 51.319(h)(3). Finally, we also readopt our finding contained in the *Line Sharing Order* that if an incumbent LEC disconnects a customer's voice service in accordance with applicable law, then the competitive LEC must purchase the entire loop to continue providing that customer with xDSL service. *Line Sharing Order*, 14 FCC Rcd at 20947-48, para. 73.

[799] *Id.* at 20949-50, paras. 76-79.

[800] CompTel Comments at 43-45.

[801] *See* 47 U.S.C. § 251(c)(5) (specifying network disclosure requirements); 47 C.F.R. §§ 51.324-.335.

addition, any state requirements that currently apply to an incumbent LEC's copper loop or copper subloop retirement practices will continue to apply.

(b) Next-Generation Networks

272. Although we require the unbundling of legacy technology used over hybrid loops, we decline to attach unbundling requirements to the next-generation network capabilities of fiber-based local loops, *i.e.*, those loops that make use of fiber optic cables and electronic or optical equipment capable of supporting truly broadband transmission capabilities based on the analysis described earlier in this subsection. We expect that this decision to refrain from unbundling incumbent LEC next-generation networks – which is based on our evaluation of an extensive record developed over more than two years – will stimulate facilities-based deployment in two ways. First, with the certainty that their fiber optic and packet-based networks will remain free of unbundling requirements, incumbent LECs will have the opportunity to expand their deployment of these networks, enter new lines of business, and reap the rewards of delivering broadband services to the mass market. Thus, we conclude that relieving incumbent LECs from unbundling requirements for these networks will promote investment in, and deployment of, next-generation networks. Second, with the knowledge that incumbent LEC next-generation networks will not be available on an unbundled basis, competitive LECs will need to continue to seek innovative network access options to serve end users and to fully compete against incumbent LECs in the mass market. The end result is that consumers will benefit from this race to build next generation networks and the increased competition in the delivery of broadband services.

(i) FTTH Loops

273. We conclude that requesting carriers are not impaired without access to FTTH loops,[802] although we find that the level of impairment varies to some degree depending on whether such loop is a new loop or a replacement of a pre-existing copper loop.[803] With a limited exception for narrowband services, our conclusion applies to FTTH loops deployed by incumbent LECs in both new construction and overbuild situations. Only in fiber loop overbuild situations where the incumbent LEC elects to retire existing copper loops must the incumbent LEC offer unbundled access to those fiber loops, and in such cases the fiber loops must be

[802] By "FTTH loop," we mean a local loop consisting entirely of fiber optic cable (and the attached electronics), whether lit or dark fiber, that connects a customer's premises with a wire center (*i.e.*, from the demarcation point at the customer's premises to the central office). *See* Corning Nov. 20, 2002 *Ex Parte* Letter at 2 (submitting proposed definition of FTTH loop).

[803] Alcatel Comments at 15-16; Corning Comments at 22-26 (arguing that no impairment exists for FTTH loops); Corning Nov. 26, 2002 *Ex Parte* Letter, Attach. 1 at 17-21, 78-89, Attach. 2 at 7-10; HTBC Comments at 40-41. We therefore disagree with those parties who argue we should require unbundling of FTTH loops. *See* ALTS *et al.* Comments at 82 (contending that the Commission should require incumbent LECs to provide unbundled access to "broadband fiber"); CompTel Comments at 40-42; Covad Comments at 54-58 (arguing that the Commission should unbundle fiber loops).

unbundled for narrowband services only. Incumbent LECs do not have to offer unbundled access to newly deployed or "greenfield" fiber loops.

274. FTTH loop deployment is still in its infancy. Corning notes, for example, that only 47 communities throughout the nation currently enjoy widespread FTTH deployment.[804] The record demonstrates that mass market FTTH loops are used almost entirely for providing broadband services (or broadband in conjunction with narrowband services) at this time, and that carriers are not deploying such loops to provide narrowband services alone.[805] The record further indicates that FTTH loops display several economic and operational entry barriers in common with copper loops – that is, the costs of FTTH loops are both fixed and sunk, and deployment is expensive.[806] The record also shows, however, that the potential rewards from FTTH deployment are significant. Corning notes, for example, that carriers will be able to earn a substantially greater return on their FTTH investment by offering voice, data, video, and other services.[807] Thus, we find that the substantial revenue opportunities posed by FTTH deployment help ameliorate many of the entry barriers presented by the costs and scale economies.

275. With respect to new FTTH deployments (*i.e.*, so-called "greenfield" construction projects), we note that the entry barriers appear to be largely the same for both incumbent and competitive LECs – that is, both incumbent and competitive carriers must negotiate rights-of-way, respond to bid requests for new housing developments, obtain fiber optic cabling and other materials, develop deployment plans, and implement construction programs.[808] Indeed, the record indicates that competitive LECs are currently leading the overall deployment of FTTH loops after having constructed some two-thirds or more of the FTTH loops throughout the nation.[809] Competitive LECs' active participation in deploying FTTH loops demonstrates that

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[804] Letter from Timothy Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket 01-338 at 5 (filed Dec. 20, 2002) (Corning Dec. 20, 2002 FTTH *Ex Parte* Letter).

[805] Deployment of FTTH loop plant enables a carrier to provide both narrowband voice and broadband services – in essence, voice telephony becomes an application provided over an integrated network. *See* Corning Comments at 2 (asserting that FTTH allows carriers to provide narrowband voice service, full motion video, and high speed data transfers simultaneously), 16-18; FTTH Council Comments at 1; HTBC Comments at 6-8, 14-17.

[806] *See* Corning Nov. 20, 2002 *Ex Parte* Letter, Attach. at 7-10 (estimating costs involved with deploying FTTH loops).

[807] Corning Nov. 26, 2002 *Ex Parte* Letter, Attach. at 33. Corning indicates that, through FTTH deployment, carriers could reasonably earn a return of $33 per subscriber, compared to $18 for ADSL deployment and $21 for cable modem service. *Id.*

[808] Some parties contend that competitive LECs actually have a competitive advantage in deploying FTTH loops because their labor costs are generally lower. *See* Corning Comments at 4; Corning Jan. 29, 2003 *Ex Parte* Letter at 19; Corning Nov. 20, 2002 *Ex Parte* Letter, Attach. 2 at 10. In addition, some parties argue that FTTH loop costs are declining because of the cost of the necessary attached electronics is dropping. Corning Comments at 13, n. 33. BellSouth notes that competitive LECs have "a mandatory right to access the rights-of-way of [incumbent LECs] and presumptive rights to access other utility rights-of-way." BellSouth Comments at 68-69.

[809] Corning Comments at 5; HTBC Comments at 42 (asserting that competitive LECs and incumbent LECs are on equal footing for deploying FTTH loops); Corning Reply at 12; Letter from Jeffrey S. Linder, Counsel for Corning, (continued....)

carriers are not impaired if we refrain from unbundling these loops.[810] Thus, we conclude that incumbent LECs do not have a first-mover advantage that would compound any barriers to entry in this situation. In addition, we conclude that incumbent LECs have no advantages concerning the sunk costs of greenfield FTTH loops – both incumbent LECs and competitive LECs are faced with the same issue in their deployment of such loops. As a result of our analysis, we do not require incumbent LECs to provide unbundled access to new FTTH loops for either narrowband or broadband services.[811]

276. We recognize that one FTTH deployment scenario, *i.e.*, overbuild deployment in which an incumbent LEC constructs fiber transmission facilities parallel to or in replacement of its existing copper plant, merits slightly different treatment than greenfield FTTH deployments. Although the record indicates that this scenario is largely theoretical, at least today, the evidence suggests that impairment would not exist for two reasons. First, as with greenfield deployments, competitive and incumbent LECs largely face the same obstacles in deploying overbuild FTTH loops, although incumbent LECs still enjoy an established customer base. Both competitive LECs and incumbent LECs must obtain materials, hire the necessary labor force, and construct the fiber transmission facilities. Second, we note that the revenue opportunities associated with deploying any type of FTTH loop are far greater than for services provided over copper loops. Besides providing narrowband services like voice, fax, and dial-up Internet access, competitive LECs could also deploy a wide-array of video and other broadband applications over such FTTH loops.[812] In fact, broadband platforms enabled by the deployment of FTTH loops will likely

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to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach 1 at 2 (filed Feb. 6, 2003) (Corning Feb. 6, 2003 *Ex Parte* Letter); Letter from Larry Aiello, President and Chief Executive Officer, Corning Cable Systems, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 3 (filed Feb. 3, 2003) (noting that competitive LECs have deployed 68% of the existing FTTH deployment to date) (Corning Feb. 3, 2003 *Ex Parte* Letter); Letter from Derek R. Khlopin, HTBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 4 (filed Jan. 14, 2003) (arguing that competitive LECs are not impaired without access to FTTH loops) (HTBC Jan. 14, 2003 *Ex Parte* Letter); Letter from Timothy J. Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 , Attach. 2 at 7 (filed Jan. 29, 2003) (Corning Jan. 29, 2003 FTTH *Ex Parte* Letter). Corning estimates that competitive LECs have deployed FTTH loops to 44,890 homes, that small incumbent LECs have deployed FTTH loops to 3,600 homes, that the BOCs have deployed FTTH loops to some 400 homes, and that municipalities have deployed FTTH loops to about 18,100 homes. Corning Jan. 29, 2003 FTTH *Ex Parte* Letter, Attach. at 7.

[810] Corning Jan. 29, 2003 FTTH *Ex Parte* Letter at 6-7.

[811] By FTTH loop, we mean a loop consisting entirely of fiber optic cable between the main distribution frame (or its equivalent) and the demarcation point at the customer's premises. We recognize that other "fiber-in-the-loop" network architectures exist, such as "fiber to the curb" (FTTC), "fiber to the node" (FTTN), and "fiber to the building" (FTTB). *See* Telcordia, Inc., NOTES ON FIBER-IN-THE-LOOP (FITL), SR-Notes-Series-10, Issue 1 at 5-1 to 6-17 (Jul. 2001). Our definition of FTTH loops excludes such intermediate fiber deployment architectures. For purposes of our unbundling rules, we consider any loop consisting of fiber optic and copper cable to be a hybrid loop.

[812] *See* Corning Comments at 2; HTBC Comments at 15-16 (describing services that can be offered over FTTH loops); *CSMG Study* at 10 (describing key revenue drivers for FTTH loops), 18-24 (comparing revenue opportunities for xDSL-based networks and FTTH networks); Corning Nov. 26, 2002 *Ex Parte* Letter at 28.

enable a variety of new services and applications, competing directly with the market-leading cable broadband offerings and the broadband offerings potentially provided by other technological platforms, such as satellite and wireless, thereby weakening the case for unbundling. Thus, the potential rewards for deploying overbuild FTTH loops are distinctly greater than those associated with deploying copper loops and thus present a different balance when weighed against the barriers to entry.

277. We agree with Corning and Verizon, however, that in a FTTH overbuild situation we must ensure continued access to an unbundled transmission path suitable for providing narrowband services to customers served by FTTH loops.[813] The record indicates that deployment of overbuild FTTH loops could act as an additional obstacle to competitive LECs seeking to provide certain services to the mass market. By its nature, an overbuild FTTH deployment enables an incumbent LEC to replace and ultimately deny access to the already-existing copper loops that competitive LECs were using to serve mass market customers. In this regard, incumbent LECs potentially have an entry barrier within their sole control (*i.e.*, the decision to replace pre-existing copper loops with FTTH). In order to ensure continued narrowband access in this situation, incumbent LECs have the option to either (1) keep the existing copper loop connected to a particular customer after deploying FTTH;[814] or (2) in situations where the incumbent LEC elects to retire the copper loop, it must provide unbundled access to a 64 kbps transmission path over its FTTH loop.[815] Under the first option, we do not require incumbent LECs to incur relief and rehabilitation costs for that loop unless a competitive LEC requests unbundled access to it and such loop is placed back into service. We conclude that these measures counteract any obstacles competitive LECs face in overbuild FTTH situations much like other provisions of the Act offset certain entry barriers. We note that this is a very limited requirement intended only to ensure continued access to a local loop suitable for

[813] Letter from Timothy J. Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 2 (filed Feb. 5, 2003) (Corning Feb. 5, 2003 FTTH Overbuild *Ex Parte* Letter); Verizon Jan. 17, 2003 *Ex Parte* Letter at 7 (asserting that incumbent LECs should only have to provide unbundled access to a 64 kbps transmission path over their fiber transmission facilities).

[814] Corning Feb. 5, 2003 FTTH Overbuild *Ex Parte* Letter at 2 (proposing policy recommendations related to overbuild FTTH); Corning Feb. 6, 2003 *Ex Parte* Letter at 5; Letter from Timothy J. Regan, Senior Vice President, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 2 (filed Feb. 13, 2003) (proposing overbuild FTTH policies) (Corning Feb. 13, 2003 *Ex Parte* Letter); Letter from Leonard G. Ray, Government Relations Committee Chairman, FTTH Council, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 2-3 (filed Feb. 13, 2003).

[815] *See* Letter from Timothy J. Regan, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. 3 at 1 (providing key definitions); Verizon Jan. 17, 2003 *Ex Parte* Letter at 7 (asserting that incumbent LECs should only have to provide unbundled access to a 64 kbps transmission path over their fiber transmission facilities). A key part of the HTBC proposal is ensuring that competitive LECs maintain access to "all existing non-packet loop capabilities over hybrid fiber/copper facilities." Letter from Derek. R. Khlopin, HTBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. 1 at 1 (filed Jan. 24, 2003) (HTBC Jan. 24, 2003 Khlopin *Ex Parte* Letter). As an example, HTBC states that "DS-1s provided over TDM facilities would remain subject to a Section 251 impairment analysis." *Id.*

providing narrowband services to the mass market in situations where an incumbent LEC has deployed overbuild FTTH and elected to retire the pre-existing copper loops.

278. As noted above, section 706 informs our policymaking as we determine what unbundling rules, if any, should apply to FTTH loops.[816] All parties agree that FTTH loops meet the definition of advanced telecommunications capability,[817] and so we determine that promoting the deployment of FTTH loops is particularly important in light of our section 706 mandate. Simply put, delivering broadband service is impossible without a transmission path to the customer's premises that supports broadband capabilities. While copper loops enable carriers to deliver xDSL-based broadband services, FTTH loops significantly enhance the broadband capabilities a carrier can deliver to consumers. Thus, we determine that, particularly in light of a competitive landscape in which competitive LECs are leading the deployment of FTTH, removing incumbent LEC unbundling obligations on FTTH loops will promote their deployment of the network infrastructure necessary to provide broadband services to the mass market.[818]

279. We further agree with Corning that our FTTH policy adopted herein should not adversely affect competitive LECs for several reasons.[819] First, competitive LECs have demonstrated that they can self-deploy FTTH loops and are doing so at this time. Second, competitive LECs can continue to use resale as a means for serving mass market customers after incumbent LECs deploy FTTH loops. Finally, competitive LECs can continue to have unbundled access to existing copper facilities, to the extent such facilities are available.

280. For these reasons, we disagree with AT&T that we should further study issues surrounding the deployment of FTTH loops used to serve the mass market.[820] The record contains sufficient information concerning the current deployment of FTTH loops and the economic barriers surrounding such deployment, as well as a number of studies and projections of future FTTH deployment.[821]

281. *Retirement of Copper Loops.* We decline to impose a blanket prohibition on the ability of incumbent LECs to retire any copper loops or subloops they have replaced with FTTH

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[816] Section 706(a) of the Telecommunications Act of 1996. *See* Corning Comments at 10-11 (arguing that the Commission should consider section 706 in crafting its unbundling framework); HTBC Comments at 43-44.

[817] *See, e.g.*, Corning Comments at 2, 11-13; HTBC Comments at 5.

[818] Corning Comments at 3, 10-14; SBC Reply at 55-60; Letter from Jeffrey S. Linder, Counsel for Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. at 6 (filed Jan. 31, 2003) (estimating that unbundling relief will increase FTTH deployment by a factor of 6.2).

[819] *See* Corning Feb. 6, 2003 *Ex Parte* Letter at 5.

[820] AT&T Reply at 74 (advocating that the Commission study FTTH deployment issues further before determining what unbundling requirements, if any, apply to FTTH loops used to serve the mass market).

[821] *See* Corning Nov. 26, 2002 *Ex Parte* Letter, Attach. at 29-33 (describing revenue opportunities), 42-45 (describing competitive LEC ability to self-deploy FTTH loops); *CSMG Study* at 10-14 (providing overview of study conclusions).

loops. Several parties also propose extensive rules that would require affirmative regulatory approval prior to the retirement of any copper loop facilities.[822] We find that such a requirement is not necessary at this time because our existing rules, with minor modifications, serve as adequate safeguards.[823] Pursuant to the Act and the Commission's rules, incumbent LECs must provide public notice of any network change that will affect a competing carrier's performance or ability to provide service.[824] Because the retirement of copper loop plant is a network modification that affects the ability of competitive LECs to provide service,[825] we clarify that incumbent LECs must provide notice of such retirement in accordance with our rules. Thus, incumbent LECs must disclose among other things the planned date for retiring a copper loop and a description of the reasonably foreseeable impact of the planned changes.[826] Such notifications will ensure that incumbent and competitive carriers can work together to ensure the competitive LECs maintain access to loop facilities.

282. Consistent with the proposals of Corning and HTBC, we modify our network modification rules with respect to the retirement of copper loops.[827] Specifically, when a copper loop is retired and replaced with a FTTH loop, we allow parties to file objections to the incumbent LEC's notice of such retirement. Consistent with our existing network disclosure rules, such oppositions must be filed with the Commission and served on the incumbent LEC within nine business days from the release of the Commission's public notice.[828] Unless the copper retirement scenario suggests that competitors will be denied access to the loop facilities

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[822] Allegiance Comments at 25; California Commission Comments at 18 (proposing rule requiring incumbent LEC to maintain copper plant); Letter from Timothy J. Regan, Corning, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 9 (filed Nov. 27, 2002) (Corning Nov. 27, 2002 *Ex Parte* Letter) (arguing that incumbent LECs should have the option of retiring or selling copper plant where FTTH is deployed); HTBC Comments at 36-37 (proposing measures regarding incumbent LEC retirement of legacy copper plant); TIA Comments at 17-18 (proposing rule to prohibit incumbent LECs from retiring copper loops unless they allow access to broadband facilities); AT&T Reply at 216-19 (asserting that a home-run copper loop may be of inferior quality).

[823] *See* Verizon Jan. 17, 2003 *Ex Parte* Letter at 7 (arguing that a duty to maintain two networks would impose additional costs).

[824] 47 U.S.C. § 251(c)(5); 47 C.F.R. §§ 51.325-.335. This disclosure requirement applies to the retirement of both feeder plant and distribution plant.

[825] *See, e.g.*, Sprint Comments at 45 (arguing that a competitive LEC could be stranded after an incumbent LEC upgrades its loop plant); Supra Comments at 10-13.

[826] *See* 47 C.F.R. § 51.327.

[827] Corning Feb. 6, 2003 *Ex Parte* Letter at 7 (proposing a 90-day application process before the Commission with respect to the retirement of any copper loops); Letter from Derek R. Khlopin, HTBC, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 3 (filed Jan. 23, 2003) (HTBC Jan. 23, 2003 *Ex Parte* Letter) (stating that HTBC's proposal would prohibit incumbent LECs "from retiring the existing copper loop absent permission from the Commission.").

[828] Objections to both short and long-term notices should be made in accordance with section 51.333(c) of the Commission's rules. Moreover, incumbent LECs may respond to such objections in accordance with section 51.333(d) of the Commission's rules. *See* 47 C.F.R. § 51.333(c)-(d).

required under our rules, we will deem all such oppositions denied unless the Commission rules otherwise upon the specific facts and circumstances of the case at issue within 90 days of the Commission's public notice of the intended retirement.

283. We note that, with respect to network modifications that involve copper loop retirements, the rules we adopt herein differ in two respects from the notification rules that apply to other types of network modifications.[829] First, we establish a right for parties to object to the incumbent LEC's proposed retirement of its copper loops for both short-term and long-term notifications as outlined in Part 51 of the Commission's rules. By contrast, our disclosure rules for other network modifications permit oppositions only for instances involving short-term notifications.[830] Second, we establish a mechanism to deny such objections automatically unless the Commission rules otherwise within 90 days of the Commission's public notice of the intended retirement. As a practical matter, this mechanism redefines the short-term notice rules for a subset of network modifications, *i.e.*, retirement of copper loops that are replaced by FTTH loops, and means that incumbent LECs must file their disclosures for copper loop retirements at least 91 days prior to their planned retirement date.

284. As a final matter, we stress that we are not preempting the ability of any state commission to evaluate an incumbent LEC's retirement of its copper loops to ensure such retirement complies with any applicable state legal or regulatory requirements. We also stress that we are not establishing independent authority based on federal law for states to review incumbent LEC copper loop retirement policies. We understand that many states have their own requirements related to discontinuance of service, and our rules do not override these requirements. We expect that the state review process, working in combination with the Commission's network disclosure rules noted above, will address the concerns noted by Corning and others regarding the potential impact of an incumbent LEC retiring its copper loops.

(ii) Hybrid Loops

285. Hybrid loops represent an important step towards the deployment of a fiber-based network capable of supporting a wide array of advanced telecommunications and other services. Several incumbent LECs note that they pursue their construction and network modification projects in incremental ways – first, deployment of fiber in the feeder plant and associated equipment like DLC systems (often with line cards capable of providing xDSL services), followed by fiber-to-the-curb, followed by FTTH.[831] In light of this practice, we view our task with respect to hybrid loops as determining an unbundling approach that addresses impairment, but also aligns business incentives with the explicit congressional goal of promoting the rapid deployment of advanced services.

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[829] These modified network notification requirements apply only to the retirement of copper loops and copper subloops, but not to the retirement of copper feeder plant.

[830] *See* 47 C.F.R. § 51.333(c)-(d).

[831] *See* Verizon Nov. 22, 2002 *Ex Parte* Letter at 1.

286. In making our unbundling determination for hybrid loops, we consider both impairment and, through our section 251(d)(2) "at a minimum" authority, additional factors. As noted above, we find that competitive LECs are impaired on a national basis without unbundled access to a transmission path when seeking to provide service to the mass market. We further find that this impairment at least partially diminishes with the increasing deployment of fiber. In addition, we retain the flexibility to determine the unbundling approach that best addresses the impairment in a manner that advances other goals of the Act. In this regard, balanced against impairment, we evaluate three primary factors to determine the most appropriate unbundling requirements for hybrid loops. First, we consider the costs of unbundling, *i.e.*, whether refraining from unbundling requirements will stimulate facilities-based investment and promote the deployment of advanced telecommunications infrastructure. Second, we consider the effect of alternatives to mandating unbundled access to the hybrid loops of incumbent LECs. In particular, we consider whether unbundled access to subloops, spare copper loops, and the non-packetized portion of incumbent LEC hybrid loops, as well as remote terminal collocation, offer suitable alternatives to an intrusive unbundling approach. Finally, we consider the state of intermodal competition in crafting our unbundling approach. As explained further below, after balancing these three primary factors against our impairment findings, we adopt a national approach that relieves incumbent LECs of unbundling requirements for the next-generation network capabilities of their hybrid loops, while at the same time ensures requesting carriers have access to the transmission facilities they need to serve the mass market.

287. We discuss our unbundling rules for hybrid loops below. These rules vary depending upon whether a competitive LEC seeks access for the provision of broadband or narrowband services. Therefore, our discussion is separated into two parts in order to clearly reflect this important distinction.

288. *Broadband Services.* We decline to require incumbent LECs to unbundle the next-generation network, packetized capabilities of their hybrid loops to enable requesting carriers to provide broadband services to the mass market.[832] AT&T, WorldCom, Covad, and others urge the Commission to extend our unbundling requirements to the packet-based and fiber optic portions of incumbent LEC hybrid loops. We conclude, however, that applying section 251(c) unbundling obligations to these next-generation network elements would blunt the deployment of advanced telecommunications infrastructure by incumbent LECs and the incentive for competitive LECs to invest in their own facilities, in direct opposition to the express statutory goals authorized in section 706. The rules we adopt herein do not require incumbent LECs to unbundle any transmission path over a fiber transmission facility between the central office and the customer's premises (including fiber feeder plant) that is used to transmit packetized

[832] As noted above in our description of the record evidence, incumbent LECs have deployed, and are continuing to deploy, a substantial amount of "hybrid loops," *i.e.*, local loops consisting of both copper and fiber optic cable (and associated electronics, such as DLC systems). Incumbent LECs appear to be at various stages of fiber deployment and have chosen a number of FITL architectures (*e.g.*, FTTC, FTTN) and hybrid loops. Thus, we treat such intermediate deployments of fiber as hybrid loops because they consist of both copper and fiber optic cable.

information.[833] Moreover, the rules we adopt herein do not require incumbent LECs to provide unbundled access to any electronics or other equipment used to transmit packetized information over hybrid loops, such as the xDSL-capable line cards installed in DLC systems or equipment used to provide passive optical networking (PON) capabilities to the mass market.[834]

289. Although packetized fiber capabilities will not be available as UNEs, incumbent LECs remain obligated, however, to provide unbundled access to the features, functions, and capabilities of hybrid loops that are not used to transmit packetized information. Thus, as discussed more specifically in the Enterprise Loops section, consistent with the proposals of HTBC, SBC, and others, incumbent LECs must provide unbundled access to a complete transmission path over their TDM networks to address the impairment we find that requesting carriers currently face.[835] This requirement ensures that competitive LECs have additional means with which to provide broadband capabilities to end users because competitive LECs can obtain DS1 and DS3 loops, including channelized DS1 or DS3 loops and multiple DS1 or DS3 loops for each customer.

290. Section 706 requires the Commission to encourage deployment of advanced telecommunications capability by using, among other things, "methods that remove barriers to infrastructure investment."[836] Unbundling access to hybrid loops in the manner adopted herein – that is, limiting the requesting carrier's access to the TDM portion of the hybrid loop and precluding unbundled access to the packet-based networks (and associated fiber transmission facilities) of incumbent LECs – promotes our section 706 goals in two ways. First, it limits access to the (in many cases) newly deployed fiber transmission facility, and thereby gives incumbent LECs an incentive to deploy fiber (and associated next-generation network equipment, such as packet switches and DLC systems) and develop new broadband offerings for

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[833] *See* Letter from Robert Holleyman, HTBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 (filed Jan. 24, 2003) (HTBC Jan. 24, 2003 *Ex Parte* Letter); Letter from Veronica O'Connell, Director, HTBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 (filed Feb. 7, 2003) (HTBC Feb. 7, 2003 *Ex Parte* Letter); HTBC Feb. 14, 2003 *Ex Parte* Letter. Because we decline to require unbundling of packet-switching equipment, we deny WorldCom's petitions for reconsideration and clarification requesting that we unbundle packet-switching equipment, DSLAMs, and other equipment used to deliver DSL service. MCI WorldCom Petition for Reconsideration, CC Docket No. 96-98 at 2-18 (filed Feb. 17, 2000) (MCI WorldCom Feb. 17, 2000 Petition for Reconsideration); MCI WorldCom Feb. 17, 2000 Petition for Clarification at 2, 13.

[834] *See* HTBC Feb. 14, 2003 *Ex Parte* Letter at 1-4.

[835] HTBC Feb. 7, 2003 *Ex Parte* Letter at 2 (advocating a requirement to unbundle "non-packet loop capabilities" only); SBC Jan. 24, 2003 *Ex Parte* Letter at 12-13 (describing proposal to ensure competitive LECs have unbundled access to TDM and non-packet capabilities of SBC's networks); Letter from Jonathan J. Boynton, Associate Director, SBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 5 (filed Jan. 15, 2003) (SBC Jan. 15, 2003 Broadband *Ex Parte* Letter) (explaining that competitive LECs will have continued unbundled access to "non packet fiber" feeder plant combined with copper distribution plant).

[836] Section 706(a) of the Telecommunications Act of 1996. *See* Corning Comments at 10-11 (arguing that the Commission should consider section 706 in crafting its unbundling framework); CompTel Comments at 26 (arguing that the Commission should use section 706 to expand unbundling obligations); HTBC Comments at 42-45; SBC Reply at 95-96.

mass market consumers free of any unbundling requirements.[837] Although incumbent LECs have been deploying fiber feeder plant for some time, such deployment was generally limited to the purpose of increasing network efficiency for the provision of narrowband services rather than enhancing network capabilities to deliver broadband services. In addition, fiber feeder deployment (and the broadband capabilities attendant to such deployment) is far from ubiquitous. Moreover, incumbent LECs have not widely deployed the next-generation networking equipment (*e.g.*, DLC systems with xDSL-capable line cards) needed to deliver broadband services to mass market customers served by hybrid loops.[838] Second, by prohibiting access to the packet-based networks of incumbent LECs, we expect that our rules will stimulate competitive LEC deployment of next-generation networks. Because competitive LECs will not have unbundled access to the packet-based networks of incumbent LECs, they will need to continue to seek innovative access options, including the deployment of their own facilities necessary for providing broadband services to the mass market.

291. In making our unbundling determination, we are also guided by the availability of other loop alternatives within the networks of incumbent LECs. In particular, we determine that unbundled access to incumbent LEC copper subloops adequately addresses the impairment competitive LECs face so that intrusive unbundling requirements on incumbent LEC packetized fiber loops facilities is not necessary. Unbundled access to subloops also better promotes our section 706 goals than unbundling incumbent LEC packetized fiber loops. In particular, subloop access promotes competitive LEC investment in next-generation network equipment (*e.g.*, packet switches, remote DSLAMs, etc.) and transmission facilities (*e.g.*, fiber loop facilities built to points in incumbent LEC networks closer to the home). Furthermore, unbundled subloop access furthers our goal of promoting innovation because it enables competitive LECs to differentiate their product and service offerings from those of the incumbent LEC. In addition to subloop unbundling, as discussed more fully below, we require incumbent LECs to continue providing unbundled access to the TDM-based features, functions, and capabilities of their hybrid loops where impairment exists. As discussed above, in addition to subloop unbundling, the availability of TDM-based loops, such as DS1s and DS3s, provide competitive LECs with a range of options for providing broadband capabilities. We therefore find that competitive LECs retain alternative methods of accessing loop facilities in hybrid loop situations and disagree with WorldCom and others concerning the appropriate unbundling requirements for the next-generation broadband features, functions, and capabilities of hybrid loops.[839]

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[837] *See* Corning Jan. 29, 2003 *Ex Parte* Letter at 12 (estimating that FTTH deployment will reach 31% of U.S. households if no unbundling requirements apply to incumbent LECs, but only 5% of U.S. households if unbundling requirements apply); *CSMG Study* at 26-28, 30 (concluding that incumbent LECs will deploy more FTTH loops if relieved from unbundling obligations).

[838] Indeed, some incumbent LECs contend that the regulatory environment has deterred their deployment of such equipment. *See, e.g.*, SBC Reply at 96-104.

[839] WorldCom Dec. 12, 2002 Next-Generation Networks *Ex Parte* Letter at 3 (arguing that, without unbundled access to hybrid loops, competitive LECs will not be able to serve certain customers).

292. We are also informed in our analysis by the state of intermodal competition for broadband service.[840] As noted above, cable companies have made significant inroads in providing broadband service to the mass market, but these same companies have made less progress in the market for traditional narrowband services. For example, cable companies have widely deployed broadband service in the form of high-speed Internet access offered via cable modem service, but cable telephony deployment is still in its infancy. According to a Commission staff report, more consumers continue to obtain their high speed Internet access by cable modem service than by xDSL, and the rate of growth for cable modem subscribership continues to outpace the rate of growth for xDSL subscribership (*i.e.*, since the period June to December 2001, cable modem subscribership for high speed Internet access increased 55 percent versus an increase of only 35 percent for xDSL-based subscribership).[841] A primary benefit of unbundling hybrid loops – that is, to spur competitive deployment of broadband services to the mass market – appears to be obviated to some degree by the existence of a broadband service competitor with a leading position in the marketplace.[842] We therefore tailor our unbundling requirements to most effectively address those services that are not yet fully subject to competition (*i.e.*, narrowband services in the mass market) rather than the broadband services that are currently provided in a competitive environment.

293. Several parties have advocated drawing a bright line between "old" and "new" investment in network architectures and using such a division to articulate our unbundling requirements.[843] Others contend that we should make no such distinction.[844] Based on our

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[840] *See* SBC Reply at 95; Allegiance Feb. 13, 2003 *Ex Parte* Letter at 2 (asserting that the Commission should consider the existence of an intermodal competitor with a leading position in the market).

[841] *High Speed Services December 2002 Report* at Table 2 (noting that cable companies provide 6.8 million lines capable of providing at least 200 kbps in both direction, compared to only 1.8 million xDSL lines). The *High Speed Services December 2002 Report* notes the percentage change of growth. For coaxial cable services providing at least 200 kbps in both directions, cable companies provided 4.394 million lines as of December 2001. This number increased to 6.819 million lines by June 2002. By comparison, wireline carriers provided 1.369 million such lines as of December 2001 and a total of 1.852 million such lines by June 2002. Thus, not only do cable companies provide more high speed lines capable of providing at least 200 kbps in both directions than xDSL-based carriers, but cable companies continue to outpace xDSL-based carriers in terms of the rate of growth of such subscribership. *See id.* at Table 2; *see also id.* at Table 1 (noting that cable companies provide 9.1 million cable modem-based lines compared to 5.1 million ADSL-based lines provided by LECs); *see also* Covad Siwek/Sun Decl. at paras 58-59. As a result, cable companies' leading position in providing broadband services to the mass market appears to be increasing rather than leveling off.

[842] Allegiance Feb. 13, 2003 *Ex Parte* Letter at 2 (asserting that the Commission should consider the existence of an intermodal competitor with a leading position in the market).

[843] *See, e.g.*, Alcatel Comments at 15-17; SBC Reply at 109; Verizon Jan. 10, 2003 *Ex Parte* Letter at 6-7 (proposing a line drawn on voice-grade versus broadband capability); Verizon Nov. 22, 2002 *Ex Parte* Letter at 4.

[844] AT&T Reply at 216-19 (advocating "unified loops" theory and arguing that home-run copper is not sufficient to address impairment); Covad Reply at 46-54; WorldCom Reply at 111-13 (advocating in support of unbundling all the features, functions, and capabilities of loops, including those provided by means of DLC systems and packet-switching equipment); Letter from Jonathan Askin, General Counsel, ALTS, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 5 (filed Feb. 13, 2003) (ALTS Feb. 13, 2003 *Ex Parte* Letter) (arguing that the Commission should not limit access to capacity on any fiber-fed loop plant); Letter from Jonathan Askin, General (continued....)

evaluation of impairment, as informed by the two factors noted above, we determine that drawing such a bright line is practical, if the line is drawn between legacy technology and newer technology. In fact, we conclude that such a line is best drawn based on technological boundaries rather than transmission speeds, bandwidth, or some other factor – the technical characteristics of packet-switched equipment versus TDM-based equipment, for example, are well-known and understood by all members of the industry.

294. We stress that the line drawing in which we engage does not eliminate the existing rights competitive LECs have to obtain unbundled access to hybrid loops capable of providing DS1 and DS3 service to customers.[845] These TDM-based services – which are generally provided to enterprise customers rather than mass market customers – are non-packetized, high-capacity capabilities provided over the circuit switched networks of incumbent LECs. To provide these services, incumbent LECs typically use the features, functions, and capabilities of their networks as deployed to date – *i.e.*, a transmission path provided by means of the TDM form of multiplexing over their digital networks – or certain capabilities of multi-use integrated equipment (*e.g.*, integrated line cards deployed in DLC systems).[846] Incumbent LECs remain obligated to comply with the nondiscrimination requirements of section 251(c)(3) in their provision of loops to requesting carriers, including stand-alone spare copper loops, copper subloops, and the features, functions, and capabilities for TDM-based services over their hybrid loops. In this regard, we prohibit incumbent LECs from engineering the transmission capabilities of their loops in a way that would disrupt or degrade the local loop UNEs (either hybrid loops or stand-alone copper loops) provided to competitive LECs. To ensure competitive LECs receive the transmission path within the parameters we establish, we determine that any incumbent LEC practice, policy, or procedure that has the effect of disrupting or degrading access to the TDM-based features, functions, and capabilities of hybrid loops for serving the customer is prohibited under the section 251(c)(3) duty to provide unbundled access to loops on just, reasonable, and nondiscriminatory terms and conditions.[847]

295. Finally, in balancing potential impairment against our obligations under section 706, we conclude that the costs associated with unbundling these packet-based facilities outweigh the potential benefits. A number of parties have argued that unbundling requirements deter the incentive of incumbent LECs to take risks and deploy fiber-based networks because

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Counsel, ALTS, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 3 (filed Jan. 31, 2003) (ALTS Jan. 31, 2003 *Ex Parte* Letter) (advocating in support of unbundling requirements on fiber-fed loop plant).

[845] HTBC Feb. 7, 2003 *Ex Parte* Letter at 2; SBC Jan. 24, 2003 *Ex Parte* Letter.

[846] In their submissions in this proceeding, incumbent LECs demonstrate that they typically segregate transmissions over hybrid loops onto two paths, *i.e.*, a circuit-switched path using TDM technology and a packet-switched path (usually over an ATM network). *See, e.g.*, SBC Jan. 15, 2003 *Ex Parte* Letter at 4 (providing diagram to illustrate that its network architecture consists of a TDM-based portion and a packet-switched portion).

[847] Notwithstanding our prohibition against disrupting or degrading unbundled access to the TDM capabilities of hybrid loops, incumbent LECs may remove copper loops from their plant so long as they comply with our Part 51 network notification requirements, as amended by this Order, and any applicable state law.

they would face reduced returns on their investment.[848] We recognize that, particularly in the realm of next-generation network capabilities, unbundling requirements could have the unintended effect of blunting innovation because such an approach would largely lock competitive LECs to the technological choices of the incumbent LECs. We therefore consider the effect of other approaches, such as the subloop access and remote terminal collocation requirements, discussed above, on stimulating the deployment of advanced telecommunications infrastructure. For these reasons, we conclude that it is consistent with our section 706 mandate to promote investment in infrastructure by refraining from unbundling incumbent LECs' next-generation network facilities and equipment.

296. *Narrowband Services.* With respect to providing unbundled access to hybrid loops for a requesting carrier to provide narrowband service,[849] we require incumbent LECs to provide an entire non-packetized transmission path capable of voice-grade service (*i.e.*, a circuit equivalent to a DS0 circuit) between the central office and customer's premises. Pursuant to this requirement, competitive LECs will be able to obtain access to UNE loops comprised of the feeder portion of the incumbent LEC's loop plant, the distribution portion of the loop plant, the attached DLC system, and any other attached electronics used to provide a voice-grade transmission path between the customer's premises and the central office.[850] Consistent with the access requirements for broadband services noted above, we limit the unbundling obligations for narrowband services to the TDM-based features, functions, and capabilities of these hybrid loops. Incumbent LECs may elect, instead, to provide a homerun copper loop rather than a TDM-based narrowband pathway over their hybrid loop facilities if the incumbent LEC has not removed such loop facilities.[851]

297. We recognize that providing unbundled access to hybrid loops served by a particular type of DLC system, *e.g.*, Integrated DLC systems, may require incumbent LECs to implement policies, practices, and procedures different from those used to provide access to loops served by Universal DLC systems.[852] These differences stem from the nature and design of

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[848] *See* Corning Comments at 7-9.

[849] Narrowband services include traditional voice, fax, and dial-up modem applications over voice-grade loops.

[850] As discussed below, we do not require incumbent LECs to maintain or retain copper loops if they have deployed fiber replacements. Incumbent LECs have the option of either providing competitive LECs with unbundled access to a voice-grade channel over a hybrid loop or, to the extent a copper loop exists, the existing copper loop.

[851] As Qwest points out, when incumbent LECs construct new loop plant, they frequently overlay fiber facilities that supplement existing loops. Qwest Comments at 45; Alcatel Comments at 16 (noting that, when incumbent LECs deploy fiber loops, competitive LECs would continue to maintain access to legacy copper transmission facilities). Thus, the construction of new facilities does not in itself alter a competitive LEC's ability to use the incumbent's network. Qwest Comments at 45. Qwest explains that it "does not proactively remove copper facilities in the case of an overlay" so that requesting carriers should be able to continue providing service in these circumstances. Qwest Comments at 45-46.

[852] McLeodUSA Dec. 18, 2002 *Ex Parte* Letter at 10-11; Letter from Joan Marsh, Director, Federal Government Affairs, AT&T, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 2-3 (filed Dec. 4, 2002) (AT&T Dec. 4, 2002 *Ex Parte* Letter) (describing operational issues related to providing unbundled access to (continued....)

Integrated DLC architecture. Specifically, because the Integrated DLC system is integrated directly into the switches of incumbent LECs (either directly or through another type of network equipment known as a "cross-connect") and because incumbent LEC's typically use concentration as a practice for engineering traffic on their networks, a one-for-one transmission path between an incumbent's central office and the customer premises may not exist at all times. Even still, we require incumbent LECs to provide requesting carriers access to a transmission path over hybrid loops served by Integrated DLC systems.[853] We recognize that in most cases this will be either through a spare copper facility or through the availability of Universal DLC systems.[854] Nonetheless even if neither of these options is available, incumbent LECs must present requesting carriers a technically feasible method of unbundled access.[855]

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loops served by DLC systems using a GR-303 interface, *i.e.*, integrated DLC systems, and proposing some solutions); McLeodUSA Nov. 15, 2002 *Ex Parte* Letter at 1.

[853] *See* SBC Jan. 15, 2003 *Ex Parte* Letter at 3; SBC Jan. 24, 2003 *Ex Parte* Letter, Attach. 2 at 3-4.

[854] *See* Letter from Jim Lamoureux, Senior Counsel, SBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 at 1 (filed Dec. 10, 2002) (SBC Dec. 10, 2002 *Ex Parte* Letter) (describing DLC deployment in SBC's region). SBC explains that, for 99.88% of SBC's lines served over Integrated DLC, competitive LECs have access to Universal DLC or spare copper facilities as alternatives to the transmission path over SBC's Integrated DLC system. *Id.*

[855] We recognize that it is technically feasible (though not always desirable for either carrier) to provide unbundled access to hybrid loops served by Integrated DLC systems. Incumbent LECs can provide unbundled access to hybrid loops served by integrated DLC systems by configuring existing equipment, adding new equipment, or both. *See* McLeodUSA Dec. 18, 2002 *Ex Parte* Letter 10-11. Qwest explains, for example, that it can provide a UNE loop over Integrated DLC systems by using a "hairpin" option, *i.e.*, configuring a "semi-permanent path" and disabling certain switching functions. *See* Qwest Nov. 13, 2002 *Ex Parte* Letter at 23 (describing "hairpin" solution to providing UNE loop over Integrated DLC system); *see also* Telcordia, Inc., NOTES ON THE NETWORKS, SR-2275, Issue 4, 12.13.2.1 (Oct. 2000) (describing means for incumbent LECs to provide unbundled loops to competitive LECs over integrated DLC systems). In addition, we understand that some Integrated DLC systems can simulate Universal DLC systems. *See* Telcordia, Inc., NOTES ON FIBER-IN-THE-LOOP (FITL), SR-Notes-Series-10, Issue 1, 2.3 (Jul. 2001) (noting that many modern Integrated DLC systems "can operate in UDLC mode."). Frequently, unbundled access to Integrated DLC-fed hybrid loops can be provided through the use of cross-connect equipment, which is equipment incumbent LECs typically use to assist in managing their DLC systems. McLeodUSA Nov. 15, 2002 DLC systems *Ex Parte* Letter at 10-11 (describing use of cross-connect equipment to provide unbundled loops over Integrated DLC systems); *Pronto Modification Order*, 15 FCC Rcd at 17565-66, App. B, C (showing that SBC typically uses a cross-connect in its network to establish the connection between the feeder loop plant and its circuit and packet switches); Verizon July 19, 2002 *Ex Parte* Letter at 3 (showing that Verizon typically uses central office terminations and cross-connects). McLeodUSA explains that an incumbent LEC can configure most Integrated DLC systems to assign requesting carriers "individual interface groups" that assist in establishing a complete transmission path between the central office and the customer's premises. In this way, incumbent LECs can provide Integrated DLC-fed hybrid loops on an unbundled basis. McLeodUSA Dec. 18, 2002 *Ex Parte* Letter at 10. In addition, McLeodUSA further explains that manufacturers either already account for an incumbent LEC's regulatory obligations in designing equipment (and software used to upgrade that equipment) or are planning to do so. *Id.* at 11 n.15.